TECHNOLOGY REVIEW

April 1958

technology
review
Published by MIT

No. 4 in a series

Right off the Wire

Power for earth satellites could be supplied by a new chemical battery that uses a dye to convert sunlight into electricity.

&

A new bearing metal of tin and aluminum is said to combine the bearing qualities of one with the light weight of the other.

&

Negatively ionized air is being used as a painkiller for patients with severe burns. After two exposures of twenty minutes each no narcotics are needed.

&

Users of High Voltage cables should note that high molecular weight polyethylene can be expected to have a voltage life about seven times that of standard polyethylene. (From paper on Dielectric Strength and Voltage Life of Polyethylene, presented at AIEE Winter General Meeting, February 1958, by Messrs. Hunt, Ware and Koulopoulos of Simplex.)

&

A new, automatic door opener is installed overhead, like a door check, and requires no complex, under-floor wiring. It can be installed in a few hours.

&

In a new cook stove the heat is generated in the utensil by putting it in a magnetic field. No heat is wasted and spilled food does not burn. It is said to be faster than ordinary electric stoves.

&

The "cage zone" melting system has proved successful in purifying niobium. Under high vacuum the metal is melted by high frequency current and the impurities separate to be cut off later.

&

A vinyl lining material for swimming pools of masonry or wood is in the form of sheeting with an adhesive back that sticks to the sides and assures complete waterproofing.

To meet the growing demand for power by industry, Simplex has installed new equipment that allows cable cores of greatly increased diameters to be armored with CONDEX, the interlocking armor tape made by Simplex since 1924.

&

Printed pages can actually be made to talk by means of a Japanese invention. The back of the paper is treated like magnetic tape and produces recorded sounds when a reproducing head is passed over the printed words.

&

Further information on these news items and on Simplex cable is available from any Simplex office. Please be specific in your requests.

&

A new, thirty-nine-passenger bus for intercity service is claimed to have many advantages. It has a flat floor (no step-up to seats), a "recreation area," lavatory, reclining seats and air suspension.

&

The size of electrical components may be further reduced by a process for putting tiny germanium transistors into printed circuits.

&

Buildings are being erected with the use of balloons instead of derricks.

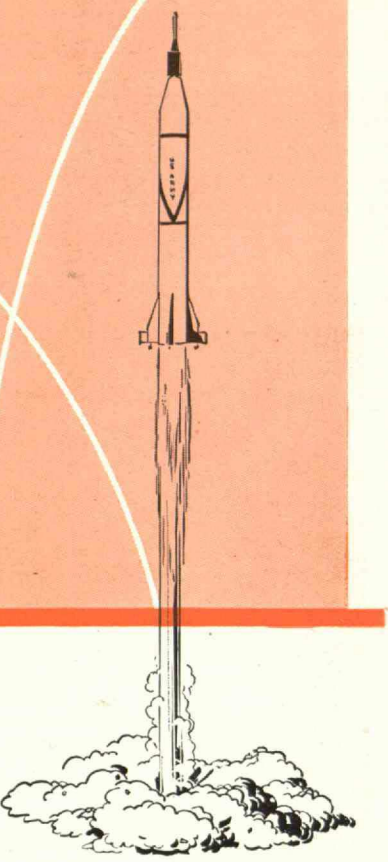
&

A method of projecting color pictures on a screen from black and white slides has been discovered.

&

An acknowledged leader of the cable industry in research and manufacturing skills, Simplex scientists and engineers present technical papers on a variety of subjects of interest to users of insulated cables. A list of papers read before the AIEE and other associations will be sent on request.

"the American manufacturers of transoceanic telephone cables"



Underwater nerves take the "miss" out of missiles

Test rockets fired from the U. S. Air Force Test Range in the Bahama Islands are tracked electronically from a series of check points along their routes. This close observation detects the slightest variance from the missiles' intended flight path. The vital communications link for this work is a 1400-mile Simplex submarine cable to Puerto Rico — a product of the world's most modern techniques in under-water cable manufacture.

For high voltage power transmission or the most exacting communications cables, Simplex' research, engineering and manufacturing facilities are at your service.

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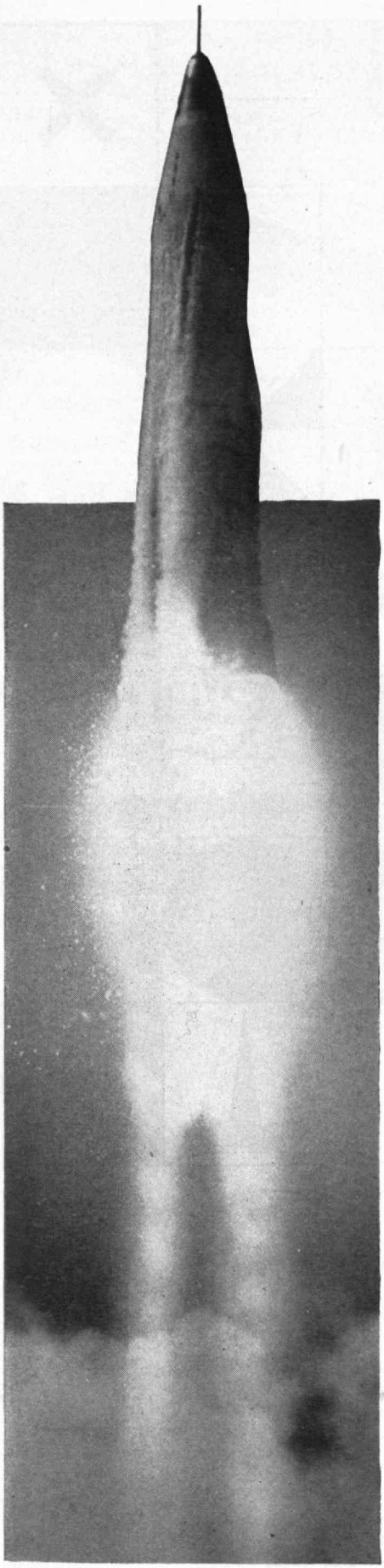

First test firing of the ATLAS ICBM at Cape Canaveral, Florida, June 11, 1957.

Honeywell Rate Gyro
Type JRT
Shown ½ size

Flight Control for the ultimate weapon

Three Honeywell Rate Gyros, Type JRT, provide missiles with precise three-axis directional stability and are currently being supplied to the ATLAS missile program.

The Type JRT is a highly accurate precision instrument for measurement of absolute rates of rotation in inertial space. Viscous damping is electro-mechanically controlled to maintain a constant damping ratio over the entire operating temperature range of −65°F. to +175°F.

This new Honeywell Rate Gyro is designed expressly for flight control of missiles and flight instrumentation in missiles and aircraft where severe ambient conditions prevail . . . and at the same time where low threshold, minimum hysteresis, excellent linearity, high natural frequency and ruggedness are essential.

Honeywell inertial components and engineering experience are available to assist in the solution of your Gyro system problems. Write for Bulletin JRT . . . Minneapolis-Honeywell, Boston Division, Dept. 1, 1400 Soldiers Field Road, Boston 35, Mass.

Honeywell

H HONEYWELL *Military Products Group*

DESCRIPTIVE DATA

- EXCELLENT LINEARITY: 0.25 % of full scale.
- LOW HYSTERESIS: Less than 0.1 % of full scale.
- LOW THRESHOLD: Less than 0.01 degree/second.
- MICROSYN PICKOFF: Variable reluctance type providing infinite resolution and high signal-to-noise ratio.
- FULL SCALE RATE: Up to 1000 degree/second.
- FULL SCALE OUTPUT: Up to 12 volts.
- RUGGED: Withstands 100 G shock.
- VIBRATION: Withstands 15 G to 2000 cps.
- SIZE: 2 7/64" diameter 4 5/16" long.
- WEIGHT: 2 lbs.

THE TECHNOLOGY REVIEW, April, 1958, Vol. LX, No. 6. Published monthly from November to July inclusive at Emmett Street, Bristol, Conn., Publication date: twenty-seventh of the month preceding date of issue. Annual subscription, $4.00: Canadian and Foreign subscription, $4.50. Entered as second-class matter December 23, 1949, at the Post Office, at Bristol, Conn., under the Act of March 3, 1879.

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4. Greater efficiency and improved system performance without the use of additional electronic components.
5. Ability to operate in both pressurized and non-pressurized parts of a plane without the use of cable dehydrators or pressurizing systems.
6. Lighter and smaller than many cables now installed in aircraft.

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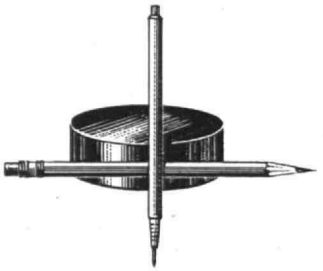
THE TABULAR VIEW

Live Talent and Dead Reckoning. — For all their lightning speed in turning out computations, modern digital computers (such as the I.B.M. 704 in the Compton Laboratories) need to be properly directed and programmed by their users. As PROFESSOR PHILIP M. MORSE, Director of the Computation Center, relates (page 299) in "Teaching Machines to Reckon," months of effort on the part of live talent may be consumed by an inanimate machine in a few minutes' actual calculation. Professor Morse received the B.S. and an honorary Sc.D. degree from Case Institute of Technology in 1926 and 1940, and the M.A. and Ph.D. degrees from Princeton in 1927 and 1929. He joined the M.I.T. Faculty in 1931, and has been a full professor since 1939. In 1949 Professor Morse became research director, Weapons Systems Evaluation Group of the Joint Chiefs of Staff. He is now a member of the Scientific Advisory Committee for the Ordnance Department and the Bureau of Standards, and since 1955, director of the Institute's Computation Center.

Business and Education. — The interdependence of business and education is ably pointed out (page 305) by EDWARD MCSWEENEY, '23. Clearly aware of the feed-back loop that is necessary for our technology to operate, Mr. McSweeney urges growing support of education, by industry, as the logical means for industry to best advance its own needs. Mr. McSweeney has had wide experience in the business, management, and publications fields, with several stints in governmental public service. He is vice-president and treasurer of the Perkins-Goodwin Company of New York, and is also director of Amerace Corporation, MacFadden Publications, Inc., National Blank Book Company, and Southland Paper Mills, Inc. He is a member of several management associations, and consultant to American Legion Publications Commission. He is author of "Organization for More Efficient Management" (as well as numerous journal articles on organization and business problems), and has been guest lecturer at New York University and Northwestern University.

Equus Caballus. — Along with the American bison, the draft horse may be on its way to extinction after playing a major role in the nation's development. Thus thinks The Review's perennial contributor (page 307), FREDERIC W. NORDSIEK, '31. A reasonably complete biographical sketch of Mr. Nordsiek appeared on page 138 of the January, 1958, issue. As an item of news, we are able to report, however, that Mr. Nordsiek is busily engaged in making the conversion from "hunt-and-peck" typing to the more classical touch system, as an avocation from his post as administrator for the American Cancer Society.

. . . combs or cosmetics



. . . pencils or pucks

. . . inks or insecticides

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MAIL RETURNS

INVENTIONS IN FLIGHT

FROM PROFESSOR EDWARD S. TAYLOR, '24:

The article "Invention in Flight" in The Review for February, 1958, contains a number of misleading statements. On a 1,000-mile flight on any of a number of air lines which fly Douglas DC-7 airplanes, regular cruising speed is 365 miles per hour, not 300 m.p.h. as stated. The Ram Jet is a completely worthless power plant at 750 miles per hour. It is necessary to fly more than twice this speed before this power plant becomes interesting at all.

The most glaring error, however, is the statement that "his (Langley's) airplane was successful *in all respects but power plant.*" As a matter of fact, the Manly engine used in the Langley airplane was an outstanding success. This engine produced 52 horsepower for 10 consecutive hours for a weight of 124 pounds. For comparison, the Wright brothers' engine developed 12 horsepower and weighed 180 pounds. I refer Dr. Blizard to "The Manly Engine" published by the Society of Automotive Engineers (1942) "for the purpose of making accessible to all who are interested in aircraft engines, the extraordinary pioneer work of Charles M. Manly in the development of the first successful light-weight internal-combustion engine. It is so seldom that an engineer is able to contribute more than a small step in the development of such a complicated mechanism as an aircraft engine, that we must pause in awe and profound respect for an engineer, who, at a time when the greatest of the world's engineers denied the possibility of an engine weighing less than 10 pounds per horsepower, developed a successful radial engine with an odd number of cylinders, which weighed less than 3 pounds per sustained horsepower, a performance which was not surpassed until the advent of the Liberty engine."

Professor of Aircraft Engines
M.I.T., Cambridge 39, Mass.

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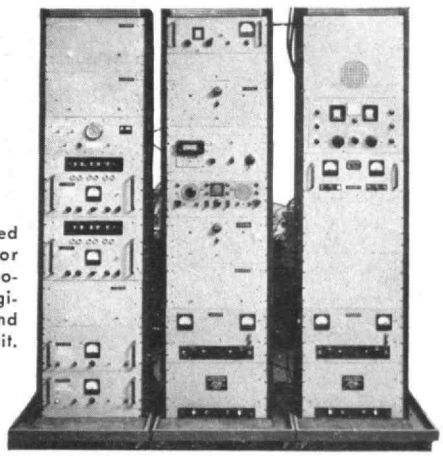
High Frequency Crystal Filter. Center Frequency 10 Mc, Bandwidth 2 Kc.

. . . from miniature components

Pioneers in the design and development of high frequency Crystal Filters in the 10Kc to 30Mc range, Hycon Eastern has worked closely with the electronics industry to reduce costs and make mass production runs practicable (more than 4,000 units delivered to date). Greatly simplifying electrical circuits, the Crystal Filter improves communications equipment by substantially reducing the need for multiple conversions as well as increasing the accuracy of frequency selections. *Write for Crystal Filter Bulletin.*



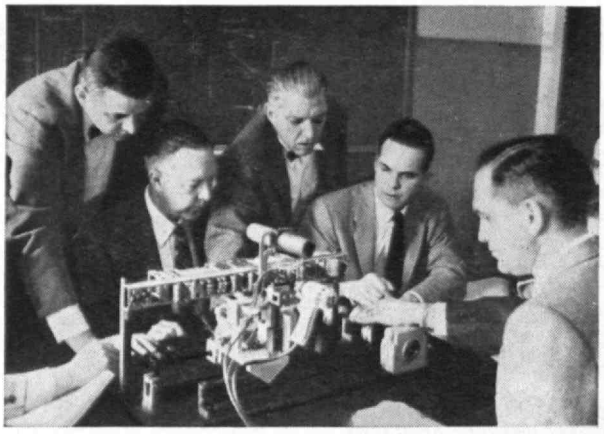
Timing System designed and manufactured for General Electric incorporating Hycon Eastern Digital Timing Generator and Magnetic Tape Search Unit.

. . . to complex systems

Locating specific data on magnetic tape units had been an unwieldy and time-consuming procedure. To solve this difficulty, Hycon Eastern engineers designed two companion units for high speed access to selected data in magnetic tape recorders and multi-channel magnetic tape instrumentation systems. The Digital Timing Generator, Model 201, generates numerically coded signals which are recorded throughout the data recording periods, providing a precise index. Based on indices recorded by the Digital Timing Generator, the Magnetic Tape Search Unit, Model 202, automatically selects for controlled playback the data specified by panel dial settings. Model 202 may be modified to search for timing formats other than those originated by Model 201. Model 206A (not shown) is a militarized version of Model 201 for airborne applications. *Write for Technical Bulletin TSG.*

HYCON EASTERN, INC.

75 Cambridge Parkway Dept. H Cambridge 42, Mass.



Your professional advancement is accelerated by our company-sponsored self-development programs: our full-time, off-the-job Graduate Engineering Training Program and the Tuition Refund Plan for after-hours college study. Engineers are important to all phases of Western Electric's job as manufacturer, purchaser, distributor and installer for the Bell System.

Your professional advancement

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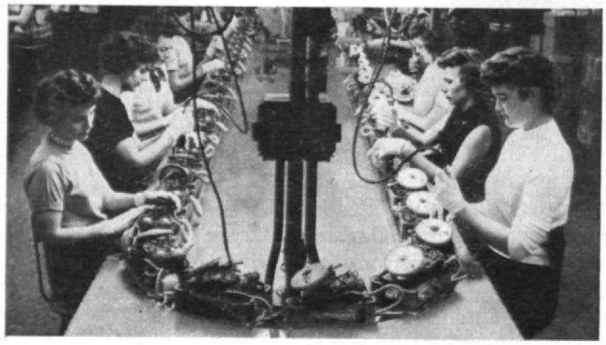

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Designed for 300 psig at 450F, this reactor will be subjected to unusually corrosive service. Hastelloy, a non-ferrous nickel-base alloy, was specified to line the vessel. The ASME Code shell was first lined with narrow strips and segments by manual metallic-arc welding. Then the welds were covered by cap strips, heliarc-welded to the liner. Multiple tests confirmed the excellence of the welds. Manually welding so many feet of alloy called for the most skilled craftsmanship—the type of craftsmanship Graver has characteristically applied to alloy fabrication for years. When custom-crafted vessels in special alloys are the answer to your corrosion problem, calling in Graver assures quality fabrication, long life and dependable service.

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THE TECHNOLOGY REVIEW

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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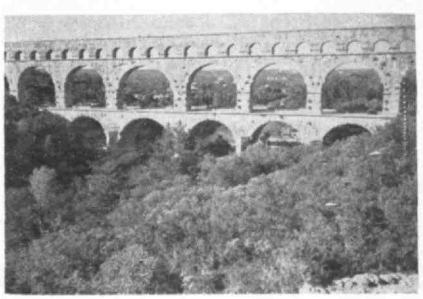
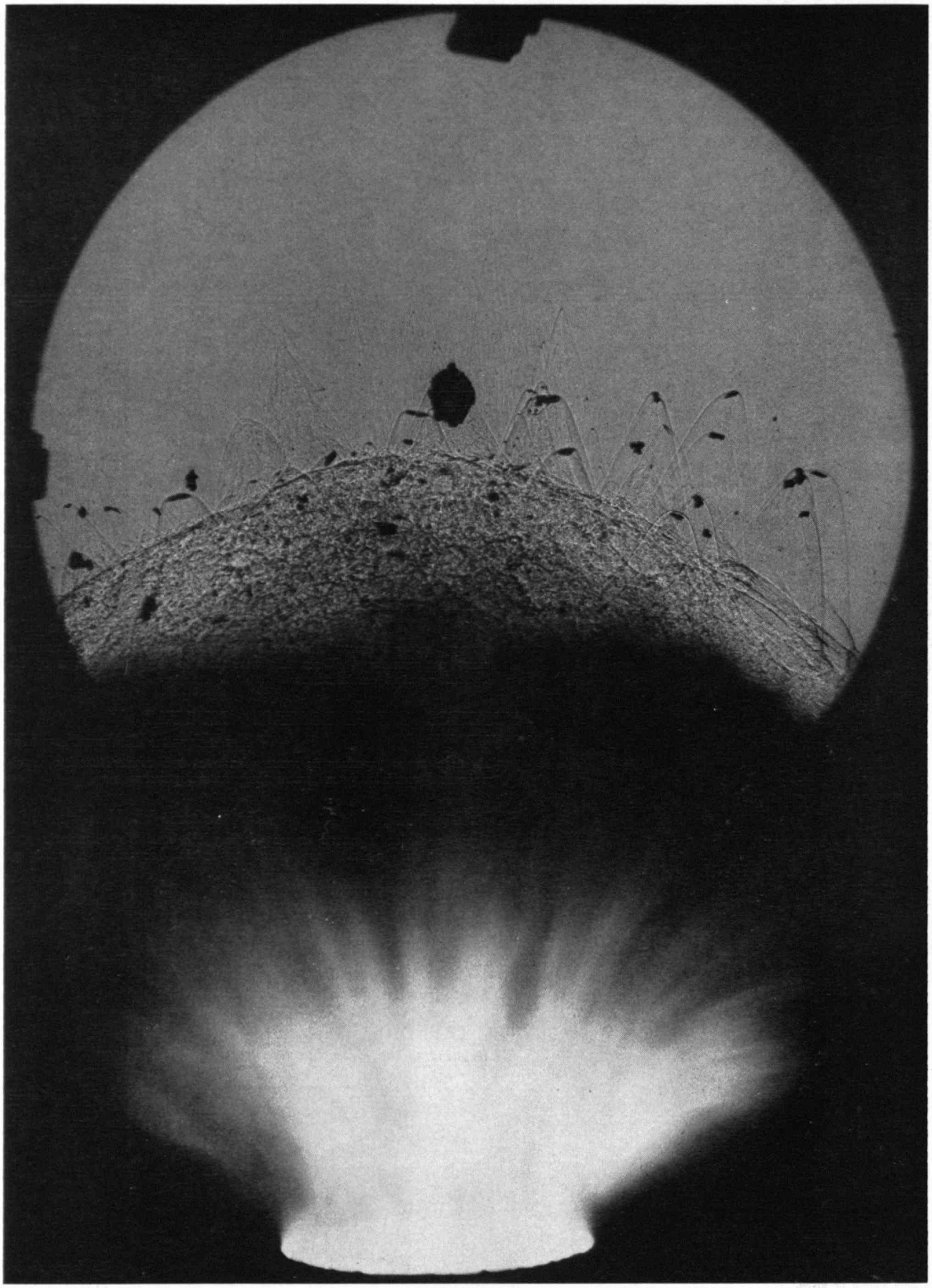


Pont du Gard, aqueduct built by Romans, near Nimes, southern France.

Photograph by Paul L. Rittenhouse

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 60 cents a copy. Annual subscription, $4.00; Canadian and foreign subscription, $4.50. Published for the Alumni Association of the M.I.T.; Gilbert M. Roddy, President; H. E. Lobdell, Executive Vice-president; John J. Wilson, D. Reid Weedon, Jr., Vice-presidents; Donald P. Severance, Secretary-Treasurer. Published at Hildreth Press, Inc., Bristol, Conn. Editorial Office, Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Bristol, Conn. Copyrighted, 1958, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.



Not the Moon . . .

apparently disintegrating, but a silhouette of fragments from a dynamite explosion photographed by Harold E. Edgerton, '27, Professor of Electrical Measurements. At exposure time of about 1/20th of a microsecond, a Number 6 dynamite cap in one-inch hole in a steel tube (two-inches diameter) explodes. V*-shaped wake (upper half of picture) indicates fragments' high velocity.*

The Technology Review

VOL. 60, NO. 6 APRIL, 1958

The Trend of Affairs

Nuclear Engineering

■ A Department of Nuclear Engineering, to educate students in the peaceful application of atomic energy, is to be established at the Institute, according to a recent statement by Julius A. Stratton, '23, Acting President. Manson Benedict, '32, Professor of Nuclear Engineering, has been appointed head of the new Department which will be established on July 1.

The $2,640,000 nuclear reactor at M.I.T., which will be completed this spring, will serve as a laboratory for the new Department, enabling students to make firsthand studies of atomic energy produced by the fission process. Subjects taught will also include fusion, the nuclear reaction which occurs in the sun and stars and which is regarded as an inexhaustible power source for the future.

The Department of Nuclear Engineering, first in any New England college and one of the first in the United States, is the outgrowth of several years of experience in nuclear engineering at M.I.T. It will be a division of the School of Engineering, of which C. Richard Soderberg, '20, is dean. The teaching program will dovetail with a research program, which will include studies of atomic energy for medical and industrial, as well as scientific, purposes.

In the next two years, the demand for engineers and scientists in atomic energy work will nearly double, Dean Soderberg said. This estimate is based on a survey, made in 1957 for the Atomic Energy Commission by the Atomic Industrial Forum, showing that about 9,000 scientists and engineers were employed by industry in privately supported atomic energy activities. By 1960, industry expects to need 16,000 technically trained persons.

"Not only is there a rapidly increasing demand, but there is an exceptional demand for men of high abilities," Dean Soderberg said. "Nuclear engineering is a complex subject and requires competence in physics, chemistry, metallurgy, chemical, electrical, and mechanical engineering and other fields. At M.I.T. we hope to train the men who will be leaders in atomic energy.

"The students we must educate now are the ones who will discover new ways of using atomic energy — ways of which perhaps we have not even dreamed," said Dean Soderberg.

The first course in nuclear engineering was offered at M.I.T. in 1952 and since that time other courses have been developed, under the leadership of Walter G. Whitman, '17, Head of the Department of Chemical Engineering. Meanwhile, expansion in such fields as experimental and theoretical physics, research in nuclear fusion, and engineering applications of nuclear energy, clearly indicated the need for a separate course in nuclear engineering. To promote study and research in this field, the Institute has recently built a nuclear reactor which will go into operation this spring.

The new M.I.T. reactor is intended for research, teaching, and medical therapy, and is not designed for the generation of power. Nevertheless, students receiving degrees in the new Department will be prepared to carry on professional work in the design and operation of power reactors, among other things.

Study in the new Department will require prerequisites of physics, mathematics, and engineering, Dean Soderberg said. Classes will be open to undergraduates but the Department will give degrees only for graduate work. Subjects to be studied in the Department of Nuclear Engineering will include: the theory of nuclear reactions and their means of production; design and construction of nuclear reactors, including cooling and control systems; shielding against harmful radiation; biological effects of radiation; nuclear metallurgy; nuclear chemical technology; heat transmission; and instrumentation. In addition to classes in Cambridge, nuclear engineering students may attend the Engineering Practice School conducted by M.I.T. at Oak Ridge, Tenn.

This year 94 students — including 17 foreign students — have been registered for graduate study in nuclear engineering. Of these, 23 are from M.I.T. and the rest have come from 49 other institutions, including Annapolis and West Point.

Professor Benedict came to M.I.T. in 1951 at the time a decision was made for the Institute to enter the field of nuclear engineering. He was joined in 1955 by Theos J. Thompson, Associate Professor of Nuclear Engineering, who has directed the design

Class Reunions in 1958

Class	*Date*	*Place*	*Reunion Chairman or Class Secretary*
1893	June 16	Luncheon—M.I.T. Campus	George B. Glidden, Centre Street, R.F.D., N. Dighton
1898	June 17	To Be Announced Later	Edward S. Chapin, The Eliot, 370 Commonwealth Avenue, Boston 15
1900	June 17-19	The Pines, Cotuit	Elbert G. Allen, 11 Richfield Road, W. Newton 65
1903	June 14-15	Burton House, M.I.T., Cambridge	LeRoy B. Gould, 36 Oxford Road, Newton Center 59
1908	June 13-15	*50th Reunion* Snow Inn, Harwich Port	Leslie B. Ellis, 230 Melrose Street, Melrose 76
1913	June 13-15	Oyster Harbors Club, Osterville	William R. Mattson, 28 Brookdale Road, Newtonville 60
1916	June 13-15	Chatham Bars Inn, Chatham	Harold F. Dodge, 96 Briarcliff Road, Mountain Lakes, N.J.
1918	June 13-15	The Treadway Inn, No. Falmouth	John W. Kilduff, Estes Street, Amesbury
1923	June 12-15	The Pines, Cotuit	Wentworth T. Howland, 1771 Washington Street, Auburndale 66
1928	June 13-15	Marshall House, York Harbor, Maine	Walter J. Smith, 209 Waverly Street, Arlington 74
1933	June 14-16	*25th Reunion* Baker House, M.I.T., Cambridge	Charles C. Bell, 180 Wamponoag Road, E. Greenwich, R.I.
1938	June 14-15	Chatham Bars Inn, Chatham	John R. Cook, Wendling Farm, Williamstown
1943	June 13-15	Royal Club Hotel, Megansett Beach, Falmouth	Ralph E. Leader, 123 Country Way, Needham
1948	June 13-15	Curtis Hotel, Lenox	Robert H. Bliss, 55 Arbor Street, Wenham
1953	June 14-15	Wentworth-by-the-Sea, Portsmouth, N.H.	Marion C. Manderson, 100 Martin Street, S. Acton

and construction of the M.I.T. reactor. Other members of the new Department will include: Professor Irving Kaplan, Edward A. Mason, '48, Associate Professor of Nuclear Engineering; Melville Clark, Jr., '43, and Gordon L. Brownell, '50, Assistant Professors of Nuclear Engineering.

Dr. Benedict began his career as a physical chemist and acquired experience in nuclear engineering through wartime necessity. As a worker for the Manhattan Project, he participated in the first important nuclear engineering project, the production of atomic bombs.

Born in Lake Linden, Mich., Professor Benedict was graduated from Cornell University in 1928 and did his graduate work at M.I.T., receiving a Ph.D. degree in 1935. He was a research fellow at Harvard University before going into industry as a chemist.

In 1942 Dr. Benedict was asked to take charge of the process design of the gaseous diffusion plant for the concentration of Uranium^{235}, built at Oak Ridge.

In 1946, Dr. Benedict was chairman of the Technical Committee on Inspection and Control of Atomic Energy of the War Department. Since 1947, he has served on the Reactor Safeguard Committee of the A.E.C. He was an adviser to the U.S. delegation at the Atoms for Peace Conference in Geneva in 1955.

Dr. Benedict serves as a consultant to National Research Corporation and the General Atomic Division of General Dynamics Corporation, and is a director of the Nuclear Science and Engineering Corporation. He is a fellow of the American Academy of Arts and Sciences, a member of the National Academy of Sciences, and a director of the American Institute of Chemical Engineers.

Placement and Deep-Sea Findings

■ Gilbert M. Roddy, '31, President, opened the 329th meeting of the Alumni Council held at the Faculty Club on Monday, February 24, which was attended by 141 members and guests. In introducing those at the head table, President Roddy presented a gavel to Theodore T. Miller, '22, as a token of appreciation and congratulations for his term as 63d President of the Association for the year 1956–1957.

Donald P. Severance, '38, Secretary of the Association, made the report for the chairman of the National Nominating Committee – Horatio L. Bond, '23, who was unable to be present. Nominees, named by this committee, were reported in the March, 1958, issue of The Review (page 241). Candidates named to serve on the National Nominating Committee (reported in The Review last month) were also listed; so, too, were candidates of classes whose numerals end in four or nine, to serve five-year terms as Class Representatives on the Alumni Council.

It was reported that between January 15 and February 6, seven members of the Institute's staff had visited eight M.I.T. clubs in Montreal and the northeast portion of the United States. Nominations for members to serve on the Afternoon Program and the Banquet Subcommittees of the 1958 Alumni Day Committee were also approved.

As chairman of the Midwinter Meeting Committee, Vincent T. Estabrook, '36, reported that 479 Alumni and guests dined at Walker Memorial on February 4, and approximately 1,000 attended the program which followed at Kresge Auditorium. At least 50 per cent of those in attendance at the Midwinter Meeting

were superintendents, principals, school board members, and science teachers in secondary schools who had been especially invited to take part in the discussions of the work of the Physical Science Study Committee. It is felt that the Association has performed a real service to the Institute and to the Metropolitan Boston community in arranging the meeting on secondary school science teaching, as reported in The Review (March, 1958, page 250).

George Owen, '94, presented resolutions on Harry H. Young, '91, which were accepted by a standing, silent vote of the Council members.

Alf K. Berle, '27, reported that personal solicitations were well under way on a regional basis. In contrast to 73 regions organized last year, there are 153 regional organizations this year. Also reported by Mr. Berle was the fact that, as of February 21, a total of 8,933 Alumni had contributed more than $291,000 to the 1958 Alumni Fund. This figure compares with 8,671 Alumni who had contributed $257,000 at the corresponding time a year ago. Of the Council members, 87 per cent had contributed to the Alumni Fund by February 21, and it was urged that the Council reach 100 per cent participation as soon as possible.

After the business portion of the meeting, Thomas W. Harrington, Jr., Placement Officer at the Institute, spoke on "The Outlook for Engineers" and Harold E. Edgerton, '27, Professor of Electrical Measurements, spoke briefly on "Camera Explorations in the Sea."

Mr. Harrington spoke of the role of the Placement Bureau in providing for student and Alumni interviews for the 450 companies who each year interview at M.I.T., and of the Placement Library. He said there has been a very noticeable change in the emphasis by companies. Although there is a reduction in the overall demand, almost as many companies are interviewing at M.I.T. as last year, but, this year they are seeking the top of the country's collective graduating class, and there has been very little upward change in starting salaries.

Mr. Harrington spoke of the relationship between the recession and its softened job market and the much publicized "engineering shortage." Today, in certain fields, notably electronics and aircraft, there is apparently little shortage in the hiring of new graduates, although there is some shortage of experienced men. Shortages still exist among small companies. He anticipated that the demand will again increase in all areas as the country pulls out of the recession.

Dr. Edgerton showed a fascinating reel of color motion pictures which were made during a recent expedition on the *Calypso* with Commandant Jacques Y. Cousteau to the Romanche Depth in the Atlantic. Halfway between Africa and South America, on the Equator, their ship anchored in 25,000 feet of water with one-half inch nylon for the "anchor chain." The pictures showed the crew paying out the nylon anchor line, as well as another nylon line on which Dr. Edgerton's deep-sea automatic camera was lowered to obtain photographs of the ocean floor at a depth of about five miles. Dr. Edgerton also presented two pictures which were taken at 24,600 feet, showing some small creatures about one and one-half inches long, a star fish, and, to the surprise of the oceanographers, a fairly rocky ocean bed!

On the Horizon

April 12, 1958 – Spring Dinner, M.I.T. Club of Philadelphia, Longwood Gardens, Kennett Square, Pa. **Speaker:** James R. Killian, Jr., '26, Special Assistant to the President for Science and Technology. (For reservations, consult Samuel K. McCauley, '41, P.O. Box 298, Upper Darby, Pa.)

June 16, 1958 – 24th Alumni Day, 1958, M.I.T., Campus in Cambridge.

November 8, 1958 – 13th M.I.T. Alumni Regional Conference, Albuquerque, N.M.

Russian Journals Translated

■ As part of a broad program to provide for freer exchange of scientific and technological information, English translations of three leading Russian journals in electronics and communications will shortly be available. These translations were made possible last summer by a $70,000 grant to M.I.T. by the National Science Foundation.

The grant is being administered by William N. Locke, Head of the Department of Modern Languages and Director of the M.I.T. Libraries, in collaboration with Jerome B. Wiesner, Director of the Research Laboratory of Electronics, and Robert M. Fano, '41, Professor of Electrical Communications.

The three Russian journals for which English translations will shortly become available are:

(1) *Radiotekhnika* (Radio Engineering);

(2) *Radiotekhnika i Elektronika* (Radio Engineering and Electronics); and

(3) *Elektrosviaz* (Radio Engineering and Telecommunications).

Translations for the Radio Engineering and Telecommunications and also for Radio Engineering and Electronics will begin with the January, 1957, issue. Translations for Radio Engineering will begin with the July, 1957, issue. The English editions are to be sold on a subscription basis, at a price ranging from $30 to $45 per volume, for libraries and commercial organizations, with 50 per cent off to individuals.

The Institute has let a contract to the Pergamon Press, Inc., a nonprofit organization with headquarters in New York, for translating, publishing, and distributing the journals.

The M.I.T. program, assuming responsibility for the radio and electronics portions of modern technology, is part of a larger program sponsored by the United States government to make English translations of Russian journals for use by scientists and engineers in industry, as well as in universities and government. Because relatively few technically trained personnel in the democratic nations speak or read Russian fluently, and because Soviet scientists are making important advances in the broad field of technology, the translation program is felt to be important to scientists and engineers of the free nations.

In March, copies of the first issue of *Radiotekhnika* to be made available in the English translation were received by Professor Locke, and should now be available to subscribers.

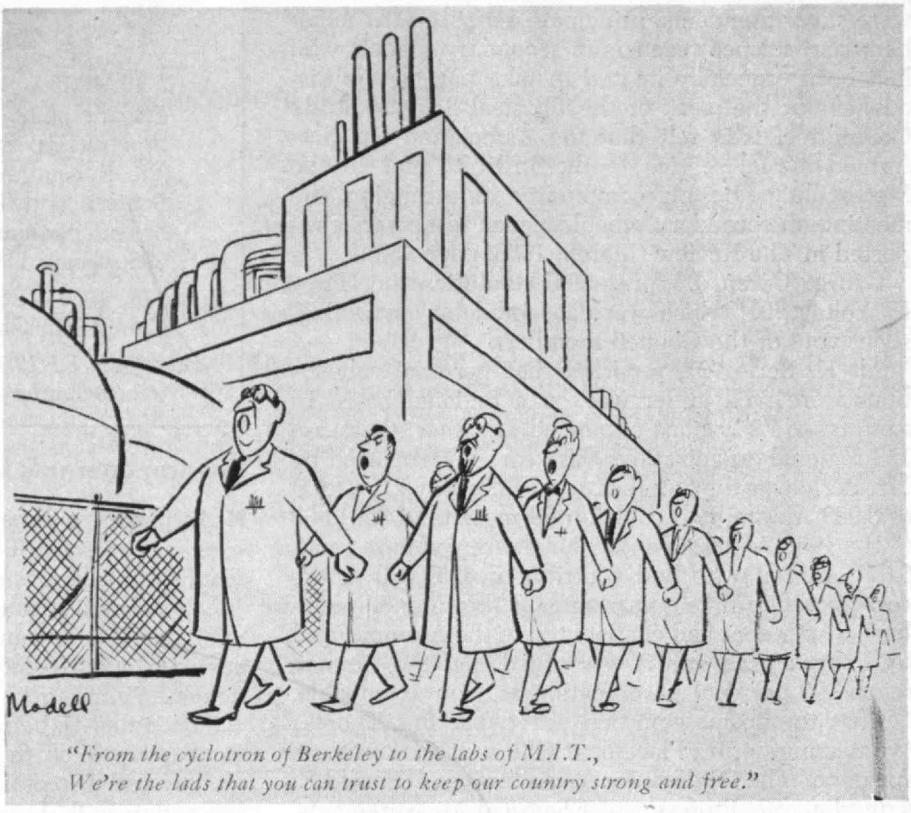
To See Ourselves As Others See Us

In addressing the Washington Regional Conference on March 1, Dean Harrison stated his belief that "Politicians, not scientists, must run the country, but they need to understand science to do it." At the same conference, Acting President Stratton emphasized the important "role of the engineer in our national progress." Scientists, it seems, have been coming out "second best."

But the New Yorker *evidently feels differently about the matter. Its January 18 issue contains the cartoon (shown at the right) which needs no further comment.*

It's a good thing, occasionally, to see ourselves through the eyes of the other person.

Altogether now — "From the halls of Montezuma, To the shores of Tripoli . . ."



"From the cyclotron of Berkeley to the labs of M.I.T.,
We're the lads that you can trust to keep our country strong and free."

Individuals Noteworthy

■ The early months of the year brought forth the following 21 promotions, elections, or appointments:

William F. Tuttle, '17, as Director of Engineering, Armco Steel Corporation . . . *Morris N. Lipp, '20,* as City Manager, Miami Beach, Fla. . . . *Harold H. Eder, '23,* as Ministro de Fomento, Republic of Colombia . . .

Henry Flynn, '23, as Manager, Port Arthur Refinery, The Texas Company . . . *Albert A. Gordon, 3d, '23,* as Manager of Manufacturing Engineering, Crompton and Knowles Corporation . . . *Walter F. Munford, '23,* and *Maxwell D. Millard, '33,* respectively, as Executive Vice-president for Engineering and Research, and as Administrative Vice-president — International, United States Steel Corporation . . .

Paul J. Cardinal, '24, as Vice-president in Charge of Industrial Relations, Hoffmann-La Roche, Inc. . . . *Edward J. Hanley, '24,* as a Director, Westinghouse Air Brake Company . . .

Charles M. Cooper, '25, and *Harcourt C. Vernon, '29,* respectively, as Assistant Division Director in Charge of the Engineering Research Laboratory, and as Director of that Laboratory, Development Engineering Division; and *Norman A. Copeland, '36,* as Assistant Director of Manufacture, Film Department, E. I. du Pont de Nemours and Company, Inc. . . .

Orrick H. Biggs, '26, as Vice-president of Engineering, Sylvania Lighting Products, Inc. . . . *John R. Kimberly, '26,* as President, American Pulp and Paper Association . . . *Stuart T. Martin, Jr., '34,* as President, Mount Mansfield Television, Inc., in the state of Vermont . . .

Marvin H. Gluntz, '35, as Executive Vice-president, H. C. Downer and Associates, Cleveland . . . *George P. Knapp, '35,* as Director of Engineering, Sanborn Company, Waltham, Mass. . . . *Leonard W. Kates, '43,* as Director of Engineering, Sylvania-Corning Nuclear Corporation . . .

William R. Zimmerman, '48, as Manager and Member of Board of Directors, American Envelope Company, West Carrollton, Ohio . . . *George A. Michael, '50,* as Chairman, Board of Registration of Sanitarians, Commonwealth of Massachusetts . . . *George B. Thomas, Jr.,* Associate Professor of Mathematics at the Institute, as First Vice-president, Mathematical Association of America.

■ Recent honors announced or presented to Alumni include:

To *Carl S. Ell, '11,* the New England Award, annually bestowed upon the area's outstanding engineer of the year, by the Engineering Societies of New England . . . to *Alfred J. Ferretti, '17,* the grade of Honorary Fellow, by the American Society of Mechanical Engineers . . . to *James H. Doolittle, '24,* an honorary doctorate in engineering, by the University of Michigan . . .

To *Alexander Squire, '39,* the Westinghouse Order of Merit "for his technical leadership and management ability in the development of the nuclear propulsion plant for fleet-type submarines . . .," by the Westinghouse Electric Corporation . . . to *Richard K. Pitler, '49,* the Frank B. Lounsberry Award, by the Allegheny Ludlum Steel Corporation. The Lounsberry Award was established in 1953 to give recognition to "technical accomplishment properly reported."

Twenty-five Years Ago This Month . . .

■ In a series of four departmental lectures, Professor Edward P. Warner, '17, traced recent trends in the field of air transportation. There had been, he observed, a substantial increase in the total of passenger miles flown, and the mileage of scheduled mail flying had shown a decided gain every year through 1931, with a slight reduction during 1932.

The safety record, as measured in passenger miles per fatality, had improved steadily, and the only foreign country with a record as good as the United States was Holland. The United States exceeded in volume the total commercial transportation of all other countries combined, and had nearly 10 times the amount of passenger transportation of its nearest competitor, Germany.

In aircraft design the most significant developments had been increased cruising speeds and passenger comforts. A gain in the average cruising speed of transport airplanes, from about 100 to 140 miles per hour, had been effected in the past few years. Improvements in passenger comfort centered largely around more adjustable seats, better ventilation, and better noise insulation of the cabin.

As to the future prospects of air transportation, he predicted that in the next 10 years air lines would handle 10 per cent of the total long-distance passenger travel of the United States, and would be self-supporting, without government subsidy in the form of mail contracts. The carriage of mail by air should increase steadily, depending somewhat upon legislation; and although air express will handle a relatively insignificant volume of the total amount of goods shipped, he thought it might become an important feature of the air-transportation system for shipments of an emergency nature.

■ In the advertising columns of The Review, The Technology Press announced publication of its first book — *Textile Research: A Survey of Progress*, which had been edited by a Board composed of 22 "leading authorities on research in the textile field." This first-born volume of the Press was, said the announcement, "reasonably priced at $2.50 postpaid."*

■ The Institute community mourned the tragic loss of four Alumni when the rigid airship U.S.S. *Akron* went down at sea on the morning of April 4, 1933 — George C. Calnan, '23, Herbert M. Wescoat, '29, Hammond J. Dugan, '32, and Joseph H. Severyns, '32.

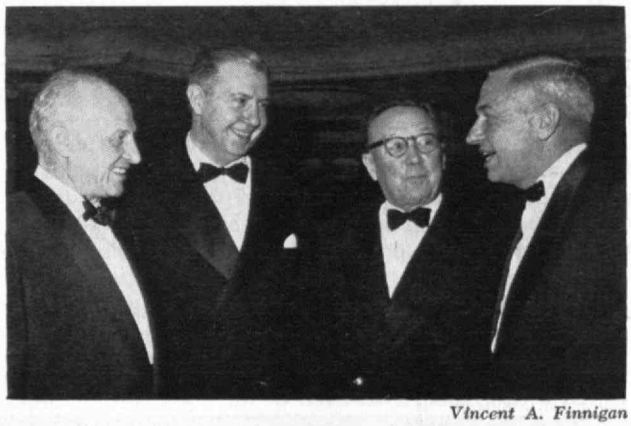
* From today's viewpoint other prices quoted in advertisements in the April, 1933, issue of The Review also seem "reasonable," for example, the North German Lloyd promised: "Now you can go to Europe in a two-weeks' vacation for $192 . . . by the *Bremen* and *Europa* . . . fastest liners afloat. All-expense tours." A year later, in the April, 1934, issue of The Review, Cadillacs were advertised at $2,395!

Washington Regional Conference

■ Frontiers of physics and biology were the principal subjects discussed at the 12th Regional Conference held at the Shoreham Hotel in Washington, D.C., on Saturday, March 1. The conference was arranged by co-operative efforts of the Institute, the Alumni Association, and the M.I.T. Club of Washington, and drew a total attendance of approximately 525 registrants, with about 425 present at the evening dinner.

In the past, regional conferences have attracted leading industrialists and educators. The Washington Conference was attended by a galaxy of scientists as well as high-ranking persons in the nation's civilian government and in the Armed Services. With problems of science of major national concern, the conference, whose theme was "The Outlook for Science in America," was not only exceptionally well received, but was most timely as well. Greetings from President Eisenhower were conveyed to the conference attendees by the Honorable James R. Killiam, Jr., '26.

Washington Alumni who took leading parts in the administration and planning of the conference included: Thomas K. Meloy, '17, conference chairman, and toastmaster at the luncheon and evening banquet; Robert W. Blake, Jr., '41, vice-chairman of the conference, and President of the M.I.T. Club of Washington; Adolphe H. Wenzell, '17, chairman, Financial Committee, and presiding officer at the morning technical session; Francis V. du Pont, '17, chairman, Invitations Committee, and presiding officer of the afternoon session; Thornton W. Owen, '26, chairman, Publicity Committee, and Charles S. Butt, Jr., '41, chairman, Arrangements Committee.

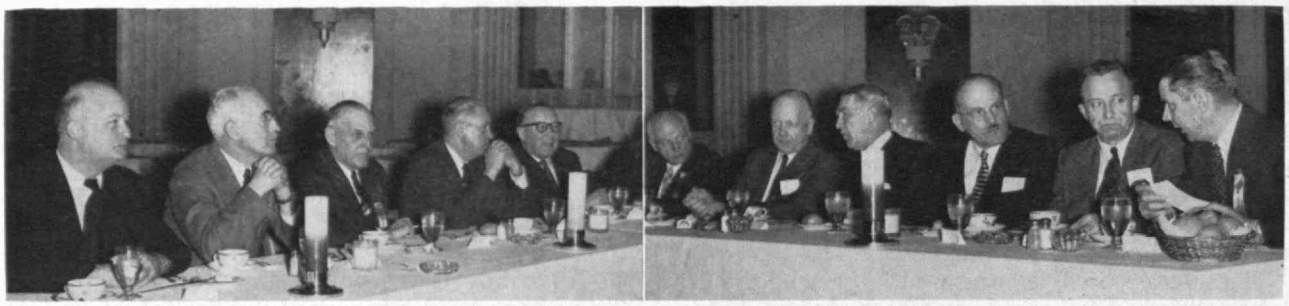


Vincent A. Finnigan

Thomas K. Meloy, '17, James R. Killian, Jr., '26, and Sir Robert Watson-Watt (left to right) appear amused at the remarks made by Lee A. DuBridge, President of the California Institute of Technology.

M.I.T. President James R. Killian, Jr., '26, currently on leave as Special Assistant to the President of the United States, and Julius A. Stratton, '23, Chancellor and Acting President of the Institute, spoke at the evening dinner. Sir Robert Watson-Watt, best known as the "Father of Radar," spoke at the noon luncheon on the topic, "Another Pearl Harbor in the West."

Taking part in addresses during the day, at which various phases of the physical and biological sciences were stressed, were: George R. Harrison, Dean of the School of Science; M. Stanley Livingston, Professor of Physics; and Francis O. Schmitt, Institute Professor and Professor of Biology; and Elbert P. Little, Executive Director, Physical Science Study Committee.



Vincent A. Finnigan

Left-hand portion of speakers' table at the luncheon included (left to right): Elbert P. Little, Executive Director, Physical Science Study Committee; George K. Harrison, Dean of Science; Francis V. du Pont, '17, who presided at afternoon session; James R. Killian, Jr., '26, who gave banquet address; and Sir Robert Watson-Watt, luncheon speaker. Right-hand portion of speakers' table included (in reading order): Thomas K. Meloy, '17, Conference Chairman; Julius A. Stratton, '23, Chancellor and Acting President of M.I.T., and banquet speaker; Adolphe H. Wenzell, '17, who presided at morning session; Francis O. Schmitt, Institute Professor; M. Stanley Livingston, Professor of Physics; and Robert W. Blake, Jr., '41, President, M.I.T. Club of Washington.

A brief summary of the addresses, as given in chronological order, is given below.

In the opinion of Dean Harrison, who spoke on "What's Ahead for Science?" politicians, not scientists, must run the country, but they need to understand science to do it. Dean Harrison said:

Despite the increasing importance of science to human welfare, scientists will not be the leaders of the America of tomorrow except as advisers. Scientists are trained specifically to avoid compromise among conflicting opinions, and to search for facts. The very essence of statesmanship is arrival at agreement when opinions are conflicting.

If our nation is to survive and to remain free, our leaders will be statesmen and politicians who have a much better understanding of the background, the aims, the methods, the potentialities, and the limitations of science and scientists.

In a democracy we obtain, in general, only leaders of the quality we deserve, and our need for new types of administrators points up the need for an enlightened citizenry, a larger proportion of which is able to meet the higher intellectual requirements of an atomic age.

The social sciences and humanities, as well as science, need emphasis, Dean Harrison said, but he asserted they should be related to science. He said:

Thus we need not only to educate more and better scientists, but to prepare the voters of tomorrow to understand the new world picture which science is revealing and has helped, willy-nilly, to produce. Our improvements in education must include not merely inducement for more students to go into science and help for those who wish to do so, but raising of the tone of general education and improvement of the disciplinary character of all subjects taught in primary and secondary schools, as well as the colleges.

Already, since the Sputnik scare which sobered us all and brought America up short, we are hearing negative reactions: the Russian schools are not really as good as ours, say some; we must not go overboard and neglect the humanities while advancing the sciences, say others; our public school teachers are not really so vastly underpaid, we are told; and we must not engage in a numbers race with the Russians.

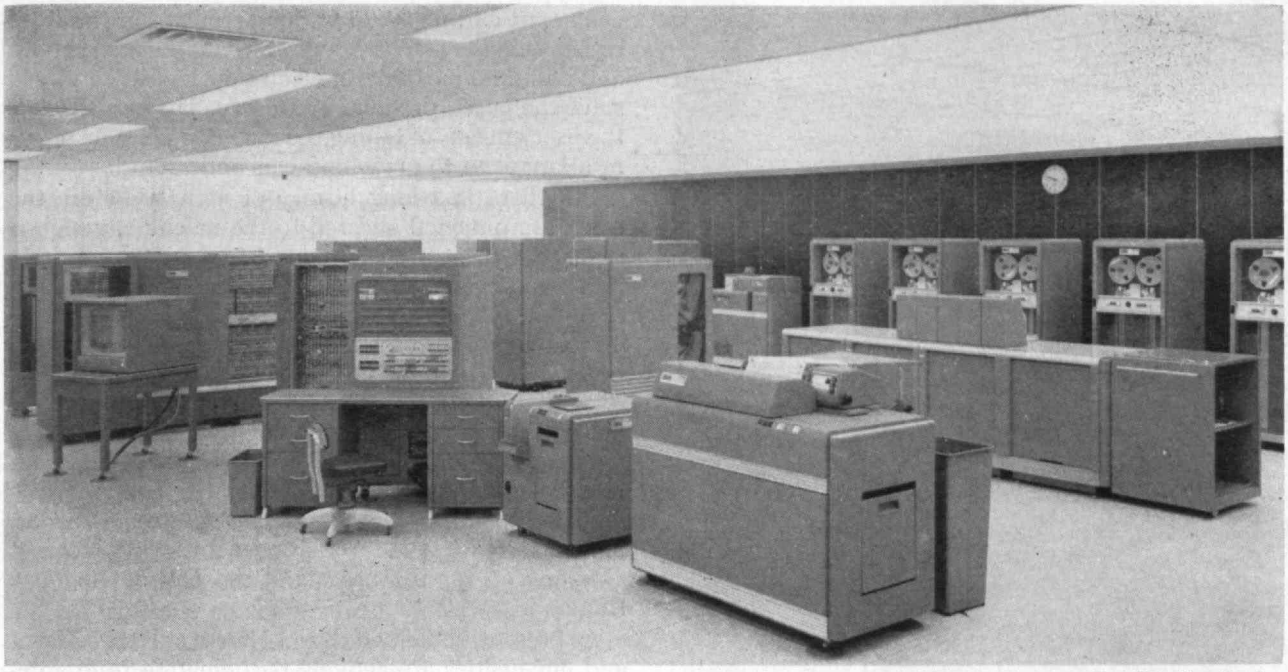
All of these statements are to some degree true, but America is faced with a real and present danger, and the minor reservations must not be allowed to sap our determination to face and overcome this danger. Social scientists and other humanists will be needed in the new age as never before, but they should be more active in increasing their awareness of the dawn of this new age.

Intelligent anticipation of the future is equally important to contemplation of the history of the past. The study of the lives of ancient Greeks and Romans is reveal-

(*Continued on page 318*)

Vincent A. Finnigan

At the evening banquet, those at the head table included (in usual order): James R. Killian, Jr., '26, Thomas K. Meloy, '17, toastmaster; Julius A. Stratton, '23, William H. Bates, Representative from Massachusetts; Gilbert M. Roddy, '31, President, Alumni Association; C. George Dandrow, '22, Past President, Alumni Association; and H. E. Lobdell, '17, Executive Vice-president, Alumni Association.



Fay Foto Service, Inc.

View of the machine area in the Computation Center. In the foreground from right to left are tabulator unit, card input, control board, and cathode-ray visual output. In the background are the magnetic tape units and the "off-line" equipment.

Teaching Machines to Reckon

Computers can count, and can store and compare data. But man must program and direct the machine in order to take advantage of its lightning-speed calculations

by PHILIP M. MORSE

VISITORS to the new Karl Taylor Compton Laboratories building seem to like to pause for a moment to look through the "store front" windows separating the first-floor corridor from the reception room and operating area of the new Computation Center which houses the various units of the recently installed I.B.M. 704 digital computer, made by the International Business Machines Corporation. Most days the scene in the air-conditioned interior displays activity, if not hectic animation. In the reception area nearest the corridor a half-dozen or more students and Faculty members will be dispersed, some hastily checking over operating instructions for the problem they wish the machine to solve, some poring over answers the machine has printed out on standard 15-inch wide report sheets, some awaiting their turn to use the computer, and some talking to colleagues or to a member of the Center staff.

Beyond the plush-cord line dividing the reception area from the operating area, the visitor can see the machine operator inserting decks of instruction cards in the card input unit or pushing buttons in response to the dancing red lights on the control console. Often the person whose problem is being run will be watching the lines of printed results as they come from the tabulation unit, eager to see the next line or dejectedly scanning evidence that something has gone wrong with the program. In the background, behind the card and tabulator units, can be seen the magnetic tape units. In some units tape reels are spinning, either to feed more data or instructions into the machine or to record results. In other units tape reels are being changed by an assistant. Over in the far left corner another group may be watching the "off-line-printer" transcribe from a tape the results of an earlier run.

Pushing through the door to the reception area, if he wins approval of the receptionist on duty, the visitor will perceive that the activity is not overly noisy; voices do not have to be raised much above conversational level except on occasions when the "on-line-printer" is particularly active. True, he is aware of the faint hiss of the air conditioning and the not-so-faint whir of the magnetic drum unit. But anyone acquainted with the deafening roar present in other computer installations will be surprised and pleased at the comparative quiet here. This result came not by chance. Each unit in a modern computer

Fay Foto Service, Inc.

View of control panel of the 704 computer. Colored buttons on the panel provide general operating controls, such as stop or start, read card, etc. Detailed instructions of the machine program are read from punched cards into the memory unit and from thence exercise high-speed control of the details of each computation. Buttons on the lower right-hand part of the panel may be programmed to provide other external controls as needed. Neon lights on the central part of the panel indicate the operation of various parts of the circuitry.

generates quantities of heat, which must be carried away or the machine would overheat in a few minutes. In most installations the cooling is achieved by flooding the area with cool air, then sucking this air into each unit as it comes by, and blowing it over the hot elements by means of a fan – a rather unimaginative method and a noisy one, for the unit fans cause 95 per cent of the noise! In the installation at the Institute the cooled air, at a slight excess pressure, is ducted directly to each machine so that no unit fans are needed, and the unit elements run actually cooler than in the usual installation. Fans have been eliminated from all major units except the magnetic drum, which now generates more noise than all the rest. As soon as arrangements can be made to remove the fans from this unit, the area will be as quiet as some of the libraries or other intellectual work areas at the Institute.

If the visitor finds his way down the stairs to the preparation room below, he will see more activity. Machine users are preparing cards by operating the typewriter keyboards of the card-punch machines, are duplicating cards from some standard-routine deck to insert in their own pile, or are running their cards through a sorter. In these various ways they get together (in the form of a set of holes punched in a deck of cards) the instructions, definitions, and data which tell the machine how to do their problem. If the dozen to a hundred holes are punched right on each card and if the 20 to 500 cards are in the right order, then the machine will translate the instructions and data into meaningful electronic activity, and will solve the posed problem in a hurry. The card deck is the user's means of telling the machine what he wants in a language the machine can understand.

But there is a long history of activity before the cards are punched and fed to the machine, which is not as apparent to the casual visitor as is the orderly bustle in the machine room. Some of it is being carried out all over the Institute as M.I.T. Faculty members translate their mathematical equations into instructions to punch onto cards, and as students struggle to state their thesis problems in a language appropriate for machine calculation. Some activity is being carried out, by visitors from other New England colleges, in the offices across the hall from the machine room, for the equipment at the Center has been donated by the International Business Machines Corporation for the use of all the colleges in New England.

At present, some two dozen New England colleges and universities are actively participating in a large-scale program aimed at introducing the use of electronic computers into the college curriculum. Each August a special two-weeks' course in coding is given by the Center staff to interested students and faculty members from all these schools. Those who have taken the course go back to their institutions and teach others how to use the equipment. At present, of the 150-odd problems being run by the machine, about 40 are from New England colleges other than M.I.T. The relative number is increasing, despite the greater difficulty out-of-towners experience in using the facilities, and it is hoped that eventually half the problems on the machine at any time will be from the other institutions.

Already the machine is busy helping to solve problems in a wide variety of fields of science, including anthropology, astronomy, chemistry, economics, engineering, geology, industrial management, mathematics, metallurgy, meteorology, modern languages, operations research, physics, and psychology. For example, as was reported in the newspapers, as soon as accurate visual sightings were reported, the orbits of the Russian satellites were computed by the machine; the results checked closely with those computed in Washington from radar sightings. In another case, the computer has been used to help establish the origin of peculiar glasslike fragments called tektites, which are found in various parts of the world, but do not appear to be of terrestrial origin. It has been suggested that tektites may be extraterrestrial particles that have been splashed off the moon by supermeteoric collisions, and peppered the earth millennia ago. The possible orbits of such particles have been calculated by the computer; the results seem to check with the distribution of tektites on the earth, though this does not prove their lunar origin. The Sputnik and the tektite problems have originated with the Harvard Observatory and the Smithsonian Institution.

To mention a few more examples, the M.I.T. Department of Meteorology has several large problems running concerned with weather prediction; the 704

is big enough and fast enough to begin to be able to compute the fantastically complex motions of air masses over the country, so as to predict what they will do tomorrow from what they are doing today. A member of the Applied Mathematics Department at Brown University is making more accurate calculations of the electron distribution in complex atoms. Members of the Nuclear Engineering Division of the Chemical Engineering Department have used the computer to help design neutron shielding for the new M.I.T. nuclear reactor, and will use it again to help determine the reactor's operating characteristics.

Each of these problems has required months of planning and coding before it was ready to be put on the machine. This pioneer work will help future users; many of the tricks of machine use and routines for computing various functions, developed for these programs, will be useful in other problems. An important task of the staff of the Center is to collect useful parts of successful programs, and to simplify and codify them so they can be used by others on similar problems. As time goes on, the task of programming will thus become easier.

In addition to computing, the machine can perform speeded-up or simulated experiments. For example, the probable behavior of a line of cars in a vehicular tunnel has been programmed. The machine is given the probable reaction of a driver to the behavior of the car ahead of him, as it speeds up or slows down or comes too close. These reactions have some random elements, so a preset randomness also is programmed into the instructions. Using these instructions, the machine then records the positions and speeds of each of the several hundred cars in turn and determines the position and speed each will have a second later. Going thus step-wise, the machine can work out the traffic flow pattern, indicating when hold-ups will occur and computing other over-all characteristics. In other words, the machine will simulate the actual traffic flow, will combine the assumed behavior of the individual units (the cars) to obtain the statistical pattern characteristic of the ensemble.

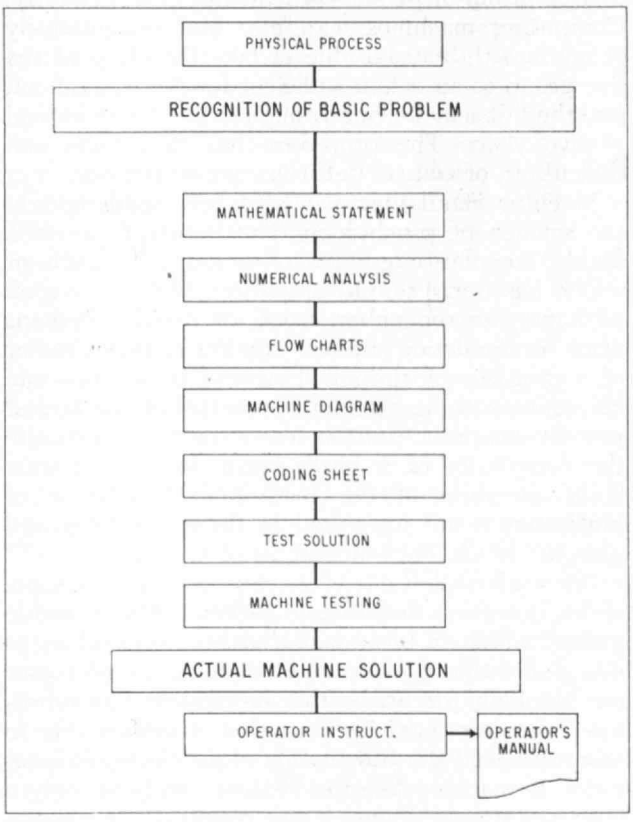
The procedure has many uses. If the statistical pattern coincides with measured data on actual traffic flow, we can be fairly sure our assumptions as to individual behavior are correct. Or we can vary the rules for individual behavior and thus see whether changes in speed limits, or required car spacing, or other unit behavior will improve the dynamics of the whole.

The M.I.T. Operations Research Group is also setting up a program to simulate the inventory system of a large industrial concern having hundreds of different stock items, several warehouses and with the usual variability of demand and supply. Here one can determine how various policies for stock reorder and shipment influence the probabilities of stock shortages, or the cost of inventory and of distribution, for example. New stock control policies can be tested in the laboratory, so to speak, instead of using the organization itself as the subject of the experiment.

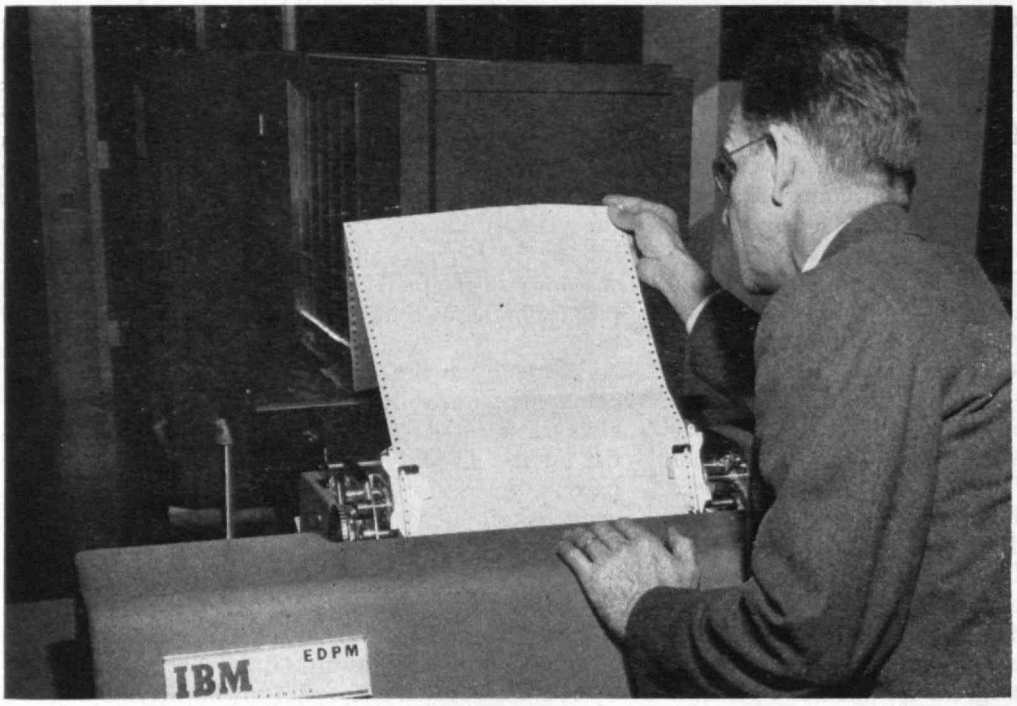
A group in the Economics Department at Harvard is working out an ambitious program to simulate the economic history of a segment of the population — the growth of a small town, for example. Working from the statistical behavior of individuals (their probability of salary raise, of buying a house, of marriage, and so on) as a function of age, salary, actions of others, and so on (including the inevitable random factors as well) they are programming the machine to work out the entire economic interdependence, the group dynamics of the selected population. To follow the histories of from 3,000 to 5,000 persons will take all the facilities of the 704, and very careful programming at that, to get answers in a reasonable time.

Although we can easily understand or specify the component parts of a complex system, we do not always (or, indeed, often) foresee all of the capabilities of the assembled system. This failing on our part makes necessary the job of the test pilot and explains why new automobile models are not always the wonderful performers they were expected to be. Chemists and physicists have long been aware that the understanding of the behavior of aggregations of atoms required more than a knowledge of the behavior of individual atoms. Gibbs, one of this country's foremost scientists, spent his life developing the theory of such large aggregates, called statistical mechanics.

Usually the mathematical techniques required to predict the characteristics of large aggregates are more difficult than the mathematics required to describe each part. Certainly, at present, mathematical techniques are inadequate to go back and forth from the characteristics of individuals (their preferences, capabilities, and interactions) as studied by the psy-



A schematic flow chart indicating the steps to be taken in getting the computer to solve a problem



The tabulator unit is one of the channels by which the 704 unit reports its results, in this case as letters, words, or numbers printed on a sheet of paper. Other direct output channels are the visual images produced on a cathode-ray screen; indirect output or input channels are the card-punch unit (opposite page) and the magnetic tape units. Two tabulator units are provided, one connected directly to the machine (on line) which is used for problems with a small amount of final answer.

M.I.T. Photographic Service

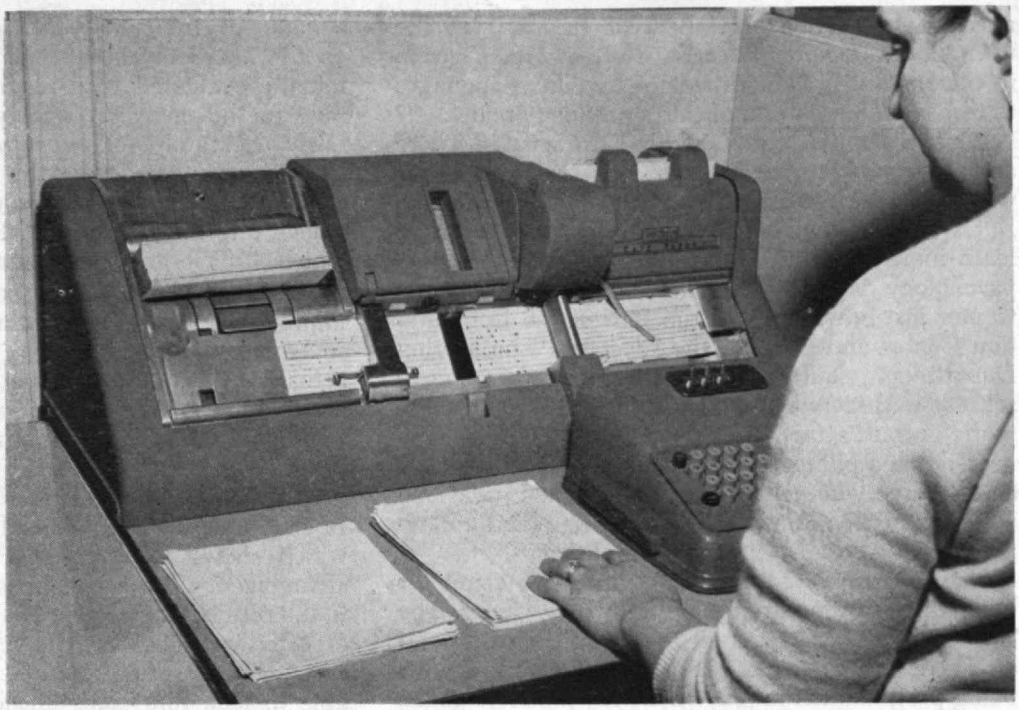
chologist and social scientist, on the one hand, to the economic and political behavior of large groups as measured by the Census Bureau or reported by historians, on the other hand. The use of machine simulation will be a powerful means of establishing such connections, of developing the statistical mechanics of social groups. Here the experimental techniques so useful in physics and chemistry are not possible; we cannot make a five-year experiment on a large group of people—at least not in this country. Computing machines, carefully and imaginatively programmed, may be able to take the place of the live group to an extent sufficient for the experiment, and the test may be run through in five hours instead of five years. The procedure has its pitfalls and difficulties, of course, but it is a promising one.

Machine simulation may also help shed light in the science of psychology. The human brain is a highly complex aggregate of nerve cells, each of which has fairly simple properties. How does such an aggregate remember, learn, or decide? Perhaps machine simulation studies – studies of the behavior of aggregates of simplified neuron responses – can help answer these questions even though the largest present computer has too few elements to simulate the complexity of a bird's brain, let alone man's. Some members of the Institute's Department of Mathematics are interested in these questions and plan to use the 704 to test some of their ideas.

But we have left our visitor unescorted, with some of his questions unanswered. What is this versatile gadget which is turning out to be so useful in so many scientific problems? Is it going to take over our thinking for us, as the automobile has substituted for our legs? To fear that eventuality is to misunderstand the functioning of an electronic computer. A machine like the 704 can really do only a few very simple things: it can count; it can remember; and it can compare. It can do these things much faster and more accurately than we can, of course, but that is all it can do. In three minutes it can do as much straight calculation – adding, multiplying, and the like – as would require a human computer (using a desk calculator) a month to do. It can store 10-digit numbers in its core memory, and retrieve them on demand in a forty-thousandth of a second, and do this several billion times without an error. And it can make the simplest sort of judgment – tell whether one number is larger or smaller than another – and base its next actions on the result.

It can do these things speedily and dependably, but this is all it can do. All the complex procedures of the calculations mentioned earlier must be built up laboriously by the programmer using these simple elements. And every action must be spelled out in detail. "Get this piece of data from storage register 113 and add it to what you have already; put the answer back in storage register 267; get the next piece of data from register 114, multiply it by two; if the result is larger than the number in register 1243, add it to the result in register 267; if not, return it and get the next number" – and so on, in endless and meticulous detail. Every possibility must be thought of; every time a division is ordered, the machine must be told what to do if the devisor is zero, for example. It is easy to see why it usually takes three months for a beginner to program a problem that the machine may run through in less than an hour.

It does not do to take a chance or to ask the machine to stop while you figure out what to do next. Machine time is too valuable for that; a minute's hold-up is equivalent to asking a human computer to wait a week while you make up your mind; the machine could be halfway through someone else's problem while you are figuring out what went wrong. Things do go wrong, of course. Many programs have "bugs" in them when they are first tried out. In this case the machine is instructed to print out where it was and what it was doing and then make



View of the machine which punches data and machine data instructions onto standard cards. The deck of cards, punched out via the keyboard shown here, is the basic form in which the user presents his problem to the 704; it is the visible result of his weeks of programming and coding. The on-line card reader translates the pattern of holes in each card into patterns of electrical pulses which are stored in the core memory for use in the next problem.

M.I.T. Photographic Service

itself ready for another problem. The unhappy programmer must take this "post-mortem" off to his office for diagnosis and come back later.

The digital computer is an immensely skillful, incredibly rapid booby, which will do exactly what it is told, but which has absolutely no judgment. It will carry out the intellectual drudge jobs for the user, but it cannot do his thinking. Any "reasoning" it is expected to do in a problem must be laid out in the programming. So the drudge work of computing is exchanged for the drudge work of programming – of laying out the steps of the computation, of translating the steps into the detailed orders, expressed in "machine language" and in punching these orders onto a deck of cards. No wonder only "tough" problems are put on the machine – problems for which the work of computing will be more tedious than the work of programming.

But this is putting the dilemma too strongly. For, if told to do so, the machine itself can do much of the drudge work of the programming. It can determine where in the memory it should store items of data and the intermediate results of its calculations; it can be told how to analyze program errors and how to print out "post-mortems" so the user can find his mistake more easily, and so on. Programs which tell the machine how to carry out much of the detailed bookkeeping of a finished program are called compiler programs. Members of the staff of the Center are busy devising better compilers to ease the work of the user. Their devising requires considerable logical subtlety and an intimate knowledge of machine behavior. After all, we are just learning what a machine of the complexity of the 704 can do.

For the computing machine itself also is a large and complex aggregate of fairly simple parts; it also displays characteristics which are hard to foresee, which require considerable study to understand fully and which thus are not yet employed as profitably as they could be. The language the machine "understands," the set of coded orders punched on cards, has a vocabulary and syntax which is troublesome to learn – though it is far simpler than any "human" language. The "words" and the "grammar" are imposed by the electrical and mechanical features of its design as much as by the logical requirements of what it is to do. It would be easier for the occasional user to be able to formulate his instructions in more familiar terms, closer to the language of usual mathematics, for example. As a matter of fact, it is possible to get the machine to do this translation.

The 704 has a complex program called "Fortran" (formula translation) which takes instructions in a more familiar language and translates them into instructions in "machine language." Instructions in Fortran require two machine actions to get an answer. First, the punched-card deck in "Fortran language" must be translated by the 704 into a proper program in "machine language," which is either recorded on tape or on a new deck of cards; this program is then fed back to the machine to get it to compute the problem itself and get the answer. Thus the machine does more work, but the machine user has an easier time of it.

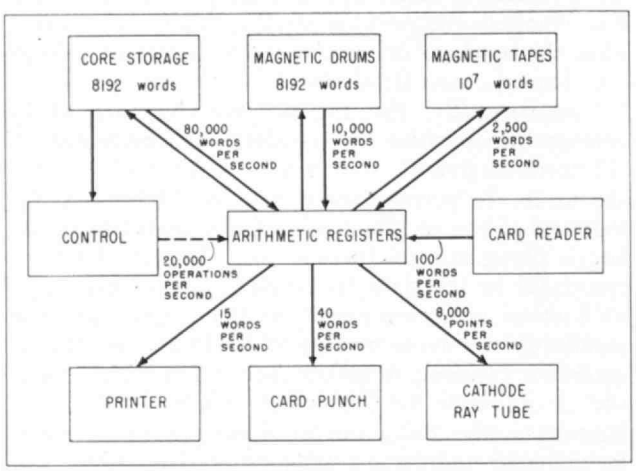
Parenthetically, the logical procedure useful in getting the machine to translate instructions from "Fortran language" to "machine language" is analogous to the procedures which would have to be followed if the machine were to be asked to translate a paragraph of Russian into English. Using a computer to translate from one "human" language to another is an immensely difficult task, and the results cannot be expected to be literature. But if machines can help translate into English the quantity of scientific articles which come out in other languages, the reduction of man-hours now spent in trying to understand what others have done will far overweigh the occasional clumsy phrasing of the

machine translation. Members of the staff of the Computation Center are co-operating with a group in the Institute's Department of Modern Languages to test some basic parts of this ambitious project.

Fortran has its limitations and drawbacks. There are some problems for which it is inadequate, for which it is best to use "machine language" directly. But we will be able to make improvements as we learn more of the 704's behavior patterns. Machine psychology is a popular field of research at the Center just now. Some of the staff of the Computation Center and some of the Electrical Engineering Department staff are co-operating to improve sensory and memory ability of the 704. The oscilloscope output, attached to the machine, will be connected, via a photocell, back to the machine memory again to see whether such an optical feed-back loop will make it possible for the machine to read a blueprint, or a page of type, for example.

Some of the ways of learning how the computer behaves are by programming it to play games. The 704 has been programmed to play ticktacktoe and also checkers against a human adversary; it is now being programmed to play chess, the Japanese game, go, and to run off several problems of business, athletic, or military competition which have structures similar to games. Such game-playing programs are of two kinds. The simpler, and less interesting, are for those games which are simple enough so that the consequences of every move and countermove can be foreseen. In these cases – the ticktacktoe is an example – all possible combinations are stored in the memory and the program instructs the machine which move to make in each possible situation. In these cases the machine is infallible – it always makes the best possible move – simply because the human programmer has included the complete situation, obtained by game theory or otherwise, in the program. The machine just has to work out the successive game theory solutions, as its adversary makes each successive move.

The more interesting problems are found in those cases for which the game is too complex for complete analysis and when game theory is consequently inapplicable. Here a different approach must be used, the investigation of which may have consequences of interest in many fields. Each possible



Schematic diagram of the functional parts of the 704 computer.

situation in the game, each configuration of pieces on the board in checkers or chess, for example, is initially evaluated with regard to its future advantage to the machine or player. This can be done fairly accurately for chess or checkers; experts at the game can rank-order the configurations in terms of chance of victory. The program then instructs the machine to move to the next possible configuration which has the greatest potential value.

Moreover, the machine can be programmed to improve on the initial evaluation by working out several moves of the game "in its mind" before it actually makes its next move. The opponent's possible countermove to the various moves it might make, then its possible next moves and the opponent's following countermoves for several steps in advance, may all be "thought out" in advance by the machine. It can then be programmed to choose that move which shows the greatest chance of reaching an advantageous configuration one, two, or more steps in the future. The present 704 can be programmed to explore three steps in the future in chess; when more core memory is installed next summer it may be able to look four steps ahead. Chess experts claim to look five or more steps ahead, so the machine cannot yet beat the champions, but it can usually beat the tyro.

In addition, the machine can be programmed to improve its game – to modify its program in the light of experience. The amount of learning possible at present is quite limited, but various improvements have already been suggested. Teaching the machine to improve its performance, on the basis of its own experience, has great promise, both practical and theoretical.

The process of looking ahead several steps in a process, of evaluating possible next steps in terms of expected future benefits, is called dynamic programming. It is a new branch of applied mathematics. Some of the basic mathematical theory has been worked out, but to speed up further developments a number of examples must be worked out in detail. Most such problems are too complex to work out by hand; they must be computed by machine. The techniques of dynamic programming will have wide application in industrial and military planning, as well as in the playing of chess and checkers. At present, members of the M.I.T. Operations Research Group are developing machine programs for various simple industrial situations involving the planning for purchase of raw material and subsequent manufacture, in the face of fluctuating prices and demands, for example.

Our visitor may conclude, at the end of his trip through the Computation Center, that in the near future an electronic computing machine will be considered to be as necessary to a university as a chemistry laboratory; ability to program for a computer will be as important a requirement for the B.S. candidate as ability to use a slide rule is now. Donation by I.B.M. of the facilities at the Computation Center has put M.I.T. and the co-operating institutions in New England in the forefront of education and research in the use of these new instrumentalities.

Business and Education: Mutual Survival

Dependent on one another while pursuing separate courses, business and education are moving toward each other in an atmosphere of growing mutual respect and understanding

by EDWARD McSWEENEY

THERE was a time, and it was not many years ago, when a businessman's interest in education – if he had any such interest at all – was likely to be somewhat superficial. He contributed money to his alma mater and perhaps to a few other educational institutions, recognizing in a vague way that the cause was worth while. When he retired, possibly, finding time on his hands, he accepted an invitation to join some nearby university's Board of Trustees.

The interest of educators in business was also quite superficial. In the academic view, the definition of a business was "an activity the sole purpose of which is to make money." There was nothing in this definition to indicate that businessmen were good for much of anything, educationally speaking, but the contribution of financial aid. Though it was generally recognized that most of a university's students would eventually earn their livelihoods in business, this fact was pushed into the background. Business and businessmen were viewed with considerable doubt and some scorn.

Happily, little of this is true any longer. Business and education are moving together in an atmosphere of growing mutual understanding and respect. They are doing so because they have to. With each of them, it is almost a question of survival.

In times as recent as the early 1940's, it was possible for a small handful of knowledgeable men to run a large company. It is hardly possible today. There has been a vast expansion in the amount of technical, economic, and other knowledge needed to keep a company in good health. No one man, no handful of men, can possibly have even a respectable fraction of this knowledge. Even in a small company there must be men who have spent their lives studying the physical sciences, economics and finance, graphic and literary communication. In a larger company, men are needed with backgrounds in psychology, languages, geology and geography, medicine, sociology and human relations. In short, as never before, business needs educated men – needs them in hordes. Without them, almost no business can hope to survive. The businessman *must* become interested in education. Adult education is an essential part of his business.

Tremendous strides have taken place in adult education as industry has grown in complexity and has become increasingly aware of the economic value of higher education. In the past half century, a wide variety of courses in adult education have become available in the larger metropolitan centers of the United States. Afternoon and evening courses, in particular, have grown in response to the needs of industry and technology. Some courses, such as the evening courses given at M.I.T. by the Lowell Institute School, aim to train men for supervisory positions; in other cases, college courses at the undergraduate or even the graduate level are available. Under certain conditions, it is even possible to obtain a bachelor's or master's degree upon satisfactory completion of a program of afternoon or evening study.

That business recognizes the value of education has long been apparent from the "on-the-job" training courses which many of the larger companies have established since World War I. In recent years, some of the larger firms, working in co-operation with nearby colleges or universities, have also developed new courses of instruction in advanced and highly specialized phases of engineering or the physical sciences. These are often given in the afternoon or evening, but some firms are encouraging programs of daytime graduate study for certain well-qualified employees. Recently, advertisements for technical personnel have also stressed the policy, followed by a few concerns, of offering scholarship aid to qualified employees who wish to take graduate degrees in their professional field.

In response to the highly specialized needs of modern industry, a new kind of educational co-operation with industry has evolved within the past decade. This is represented by the summer session courses, usually planned in co-operation with industry and given at a number of universities. Courses are usually taught by faculty members, but they have also been given by leaders in industrial technology. Instruction is usually given in the summer months when university personnel and laboratory facilities are not too heavily engaged in the customary academic program. The Summer Session courses offered at M.I.T. usually deal with topics at the forefront of present-day technological knowledge. Most of these courses are of short duration – a week or two – but a few have been longer.

The economic value of summer session courses is attested by their growth and by the fact that the number of applicants has frequently exceeded the facilities available. That business finds such instruction valuable is attested by the fact that, in nearly all cases, tuition costs are paid by the employer who

also pays the salaries of his employees who return to the college classroom.

Finally, a number of colleges have developed industrial liaison programs of one kind or another. Although the means of effecting such liaison varies, in all cases the objective is to bring industry and educational institutions into closer contact with one another, in keeping abreast of current technological advances. Frequently symposia and conferences, at the professional level, are arranged by the educational institution; in other cases, faculty members make trips to industrial organizations. The first procedure is employed by the Industrial Liaison Office of M.I.T., whereas the corresponding office at California Institute of Technology prefers the latter procedure.

In numerous ways, then, adult education is very definitely recognized as an essential part of modern progressive business.

The same kind of economic force is pushing the educator to meet and know the businessman. It is becoming increasingly apparent that government and private support are not enough to help educational institutions meet the often terrifying challenge of our growing population and growing demand for higher education. The states' educational appropriations increase year by year; tuition rates climb steadily; fund-raising campaigns grow more and more intensive. Still there is hardly a college president in the United States who today can be reasonably sure that his institution will be able to accept every qualified applicant for enrollment by 1960.

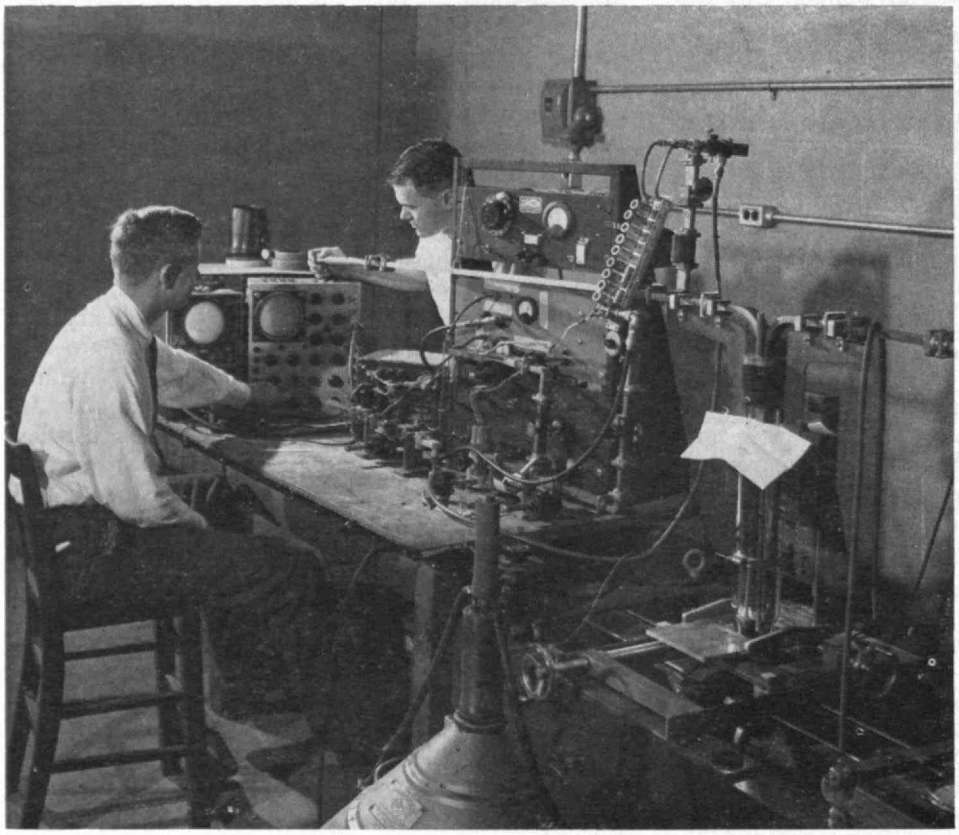
This statement is particularly true of privately endowed institutions of learning, whether at the elementary, college preparatory, or university level. Just as private institutions took the lead in advancing education in the colonies, so today we may expect them to be in the vanguard in promoting the nation's intellectual welfare. Private schools are relatively free from the pressures, toward conformity and mediocre performance, that the taxpayer sometimes advocates from a distorted concept of "democracy." The clamor for intellectual "equality" that sometimes marks discussions at Parent-Teacher Association meetings is less likely to sway the headmaster of a private school than the principal of a public school. Private schools have greater freedom to adapt their teaching programs to changing conditions, and, for the most part, they fulfill very well their obligation to foster quality of instruction.

Privately endowed colleges and universities should be expected to take the lead in maintaining high educational and intellectual standards. They are under no legal compulsions to accept every applicant who has been able to acquire a high school diploma. By emphasizing quality of instruction, they contribute mightily to the mutual survival of business and education. But privately supported schools and colleges can carry out their admirable missions only so long as they are able to remain solvent. As the real dollar value of investment return diminishes, and as taxes take an ever-increasing share of personal incomes, private schools must turn to other sources of income if they are to remain solvent while expenses rise. They cannot depend on the tax dollar to pay their bills.

The only financial force that can stop the onrush of state-supported "socialized" education seems to be business. Since business is the biggest user of what educational institutions produce, it seems quite just and reasonable that business should help in the pro-

(*Continued on page 314*)

M.I.T. Photo



"Business and education are moving together in an atmosphere of growing mutual understanding and respect. They are doing so because they have to. With each of them, it is almost a question of survival."

Except for the direct employment by industry of college graduates, probably no clearer link exists between the two than that of research in the physical and life sciences.

Shown at the left are two research workers delving into a problem of electronics in the new Karl Taylor Compton Laboratories which were opened for academic use last fall.

The Compton Laboratories Building is the administrative center for the Research Laboratory of Electronics and for the Laboratory for Nuclear Science at M.I.T.

Horse Power

Despite its important role in providing motive power, the draft horse has become a rarity in this country, and before long may well disappear into total oblivion

by FREDERIC W. NORDSIEK

SADDLE horses will, no doubt, ever be with us – steping daintily on bridle paths in city parks, emphasizing the authority of mounted policemen, performing in the "horse operas" of modern-day television programs – but draft horses, the massive beasts that once provided most of the overland motive power of this country, virtually have been banished from the scene by the inexorable pressures of economic obsolescence. Before the draft horse disappears entirely, it seems appropriate to take a retrospective, perhaps nostalgic, view of some of the curious lore that gathered about this animal during its century of ascendancy as a mobile power unit. For the draft horse's heyday did last just about a hundred years. Until the end of the Eighteenth Century, oxen were usually used for plowing and other heavy hauling. During the 1800's draft horses came into increasing, and finally into general, use; but then by 1910 steam power, electricity, and the internal combustion engine had prospered to the extent that horse populations thereupon started to decline – as they have ever since.

How Horses Haul

From the point of view of strength, speed, and endurance, man chose well in domesticating the horse as his erstwhile principal beast of burden in the temperate zone. Draft horses weigh more than 1,000 pounds, sometimes more than a ton; and a horse in good condition can easily exert a pull equal to its own weight. Such astounding muscular capacities have been measured accurately for draft horse contests; in recent times dynamometers have replaced the old-fashioned, stone-weighted sledges, once a familiar sight at county fairs. Using a dynamometer, a two-horse team weighing less than 3,000 pounds is officially recorded to have registered a pull of 3,325 pounds!

In passing, it must be acknowledged that the invention of a collar or breast strap, withal one simple in the extreme, enables the horse to exert its maximal muscular power to pull a load. This device was unknown to the ancient Romans, although they did have good horses. The harness used with Roman chariots employed a sort of belt clamped around the middle of the horse. With this contrivance the animals literally pulled their burden, and it took two or more of them to haul a chariot containing only the driver. The modern horse harness is based on a stiff padded collar encircling the horse's great neck and shoulder muscles; the animal pushes against this collar, thus readily bringing all of its strength into play, without constricting major blood vessels or exerting serious shearing action on the skin.

Anatomical Peculiarities

Any animal, even the human being, could be bred and trained to have strength and endurance; but the horse enjoys several unique anatomical features that especially suit him for his career as a beast of burden. Foremost of these attributes is the sturdy single hoof, possessed only by horses, asses (and their cousins, mules) and zebras. In evolutionary terms, this hoof corresponds to the nail of the human middle toe or finger. It is a thick mass of keratin, the exceedingly tough material of which human finger and toe nails and cattle horns consist. Like human nails, horses' hoofs constantly grow. In unshod animals running free on the open range, the rate of wear equals the rate of growth of the hoof. Unshod horses, confined to a barn or permitted only limited exercise, must have their hoofs trimmed every few weeks. Animals working on hard-surfaced roads or pavements, or pulling heavy loads on any surface whether hard or soft, must be fitted with horseshoes. If unshod, their hoofs would wear away faster than regrowth would provide replacement.

The horse bears his strong, tough hoofs at the end of legs that, in terms of human anatomy, have an extra joint. Thus, what looks like the hip or shoulder joint of a horse corresponds to our knee or elbow; the horse's real hip joint is hidden up among his great muscles. His knee joint corresponds to our ankle; his ankle to our toe joints. Much of the horse's mobility, speed, and power are due to this uniquely flexible leg structure, that exists in both its fore and rear legs.

Finally, the parallel-paired bones found in the human forearm and calf of the leg are, in the horse, fused into a single sturdy bone capable of sustaining great stresses. Broken legs are not unknown in horses, but they are relatively rare. Many of the leg stresses, commonplace to a cow pony working in a cattle roundup, would snap human legs like matchsticks.

A Tooth for a Tooth

The horse's teeth are unique, and are particularly well adapted to its way of life. Its molars grow up from the gum line as fast as they wear away at the

crowns. This eternally rejuvenated grinding equipment enables horses living in the wild state to subsist on natural grasses, however coarse and harsh, and enables domesticated animals to thrive on hay and unmilled grains. Horses, it should be noted, prosper on such tough and woody fare without the aid of the rumen, or extra stomach, that enables cattle and sheep to live on similar rations.

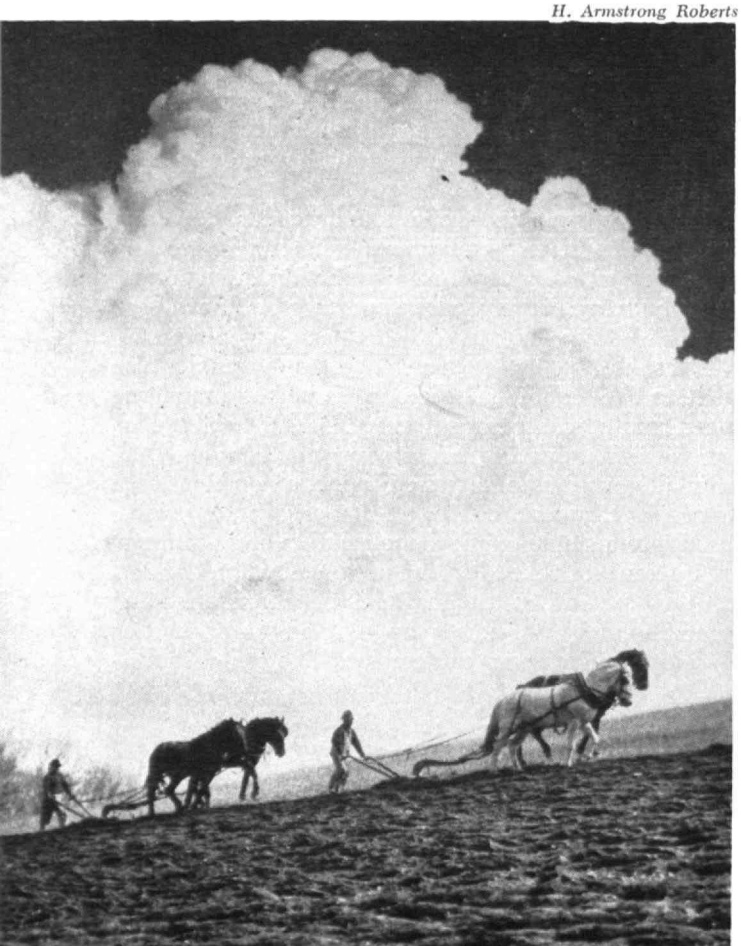
Man has exploited the arrangement of the horse's teeth in designing the bit, the metallic device inserted in horses' mouths to guide and control them. Bits rest in a toothless hiatus that exists between the horse's molar teeth in the rear of its mouth and the incisor teeth that lie right behind the lips. This toothless area is tender, so that the animals respond readily to pressures of a bit placed here. When a wily animal manages to work the bit back between his molar teeth, he can grip it there and resist all efforts to control him by the reins. That is why we say that a young person who acts independently of parental pressures "has the bit in his teeth."

A peculiarity of the horse that is a handicap to the animal, but helps man master the beast, is the horse's inability to breathe through its mouth. In consequence of this fact, a man who can restrain a horse's head enough to close the animal's nostrils with his hand, can subdue a beast having 10 times the man's size and strength.

Horse and Buggy Age

This, then, is the strong, swift, tractable — and to some eyes handsome and romantic — beast that provided overland motive power during the first century or so of this country's establishment and growth.

H. Armstrong Roberts



Horses pulled westward the covered wagons that bore the families and household goods of the American pioneers. No rations had to be carried for these animals, as the plains and prairies provided abundant grazing.

Once communities were established, horses took care of most of the local transportation. In cities, all deliveries were by horse and wagon; horses moved urban local passengers, whether by carriage, omnibus, or horse-drawn streetcar. Stagecoaches bore passengers, mail, and baggage across rough and dusty Western roads, negotiating steep grades and fording unbridged streams with utmost unconcern. After 1840, teams of fast trotting horses for light coaches flourished in the East, because adoption of the elliptical carriage spring, increasing mileage of smooth-surface macadam roads, and perfection of lightweight vehicles, made of sturdy American hickory wood, enabled rapid travel by horse and carriage.

Down on the Farm

Horses pulled the plows that broke the plains; they provided power for all of the other heavy work around farms; they hauled farm produce either directly to consuming areas or to the nearest canal or railroad.

The year 1910 saw the zenith of the farm horse in this country; that year there were 20,000,000 of the animals at work in American agriculture. Thereafter, farm horses began to be replaced slowly by power-driven machines. They became fewer and fewer in a slow but steady decline, until in the 1940's there occurred on American farms what Ezra Taft Benson has called a "technological explosion." This abrupt shift to almost totally mechanized farm methods virtually banished the last farm horses overnight.

A key to this violent change is man power; despite all of the horse's virtues, it requires much human attention to breed, train, and tend it. Man power has been steadily drifting away from the farm, making it necessary for proprietors to seek methods that minimize the requirement for human muscle and sweat. As a result, in the past 15 years production per farm worker has doubled. In 1820, about 70 per cent of the American labor force was in agriculture; today only 15 per cent is on the farms. This shift reflects a change from horse-powered to mechanized farm practices. Today, the farmer owning 40 acres of land and a horse barely can buy his groceries after paying off his hired help. But the farmer with 500 acres and the necessary mechanized equipment is prospering; the chances are that he has no hired help at all, but relies on his own family group for what labor is needed, including that required to run his machines.

On the American farm the last gasp of horsepower was associated with an attempt to minimize the element of human labor. Large teams, often including as many as eight horses were used for plowing, disking, and harrowing. With such rigs one man could guide the power of a half a dozen animals or more, and could, for example, double-disk 25 acres per day. With straining horses, creaking harnesses, clanking chains, cracking whips, and the driver's shouts, these big teams were an exciting spectacle; but the commonplace tractor, chugging undramatically along,

provides more power at less expense, and has ousted the big horse teams.

Towpath Teams

As the writer has shown on the pages of this periodical,* the main trade arteries of the United States during critical developmental years of the Nineteenth Century were the boat canals, such as the famous Erie Canal from Buffalo, N.Y. to Albany, N.Y. Let us not forget that the sole motive power of these vital avenues of transportation was provided by horses and mules. Working singly or in pairs, hitched in standard harness attached to long tow ropes, these animals plodded along towpaths beside the waterways and moved freight, commodities, and passengers in great volume for vast distances, and indeed made possible the early industrial development of this country. Some of the canal boats provided quarters not only for the crew but also for the team; a snug stable was built at one end of some of them. In the peak years of the canal trade, when various canals had to be operated around the clock, this arrangement permitted the working of horses in shifts. Boats were then supplied with two teams; one pair of animals would eat and rest aboard, while the other team pressed forward along the towpath and hauled the vessel onward. It was the economic superiority of the railroads that enabled them to put the canals out of business; and no small element in disfavor of the canals was the relative inefficiency of their motive power, the horse. By the early decades of the present century the old boat canals had lapsed into total desuetude, thus wiping out the need for vast numbers of horses that once plied their towpaths.

In Town and City

Amid the raucous huggermugger of present-day cities, an incongruous horse and wagon may occasionally be glimpsed when a junkman's cart rattles its dejected way along the street. Infrequently, the almost extinct equipage of horse and carriage may be witnessed along the peripheries of city parks, where battered and malodorous vehicles, usually piloted by equally battered drivers and drawn by sad nags, are available to take, for a brief spin along park driveways, anyone sufficiently nostalgic to pay an exorbitant rate and to endure the ancient smells of the carriages and their mangy carriage robes. But two once vitally important urban equine types have totally disappeared; the streetcar horse and the fire horse.

In the year 1886, near the peak of horse-propelled street railways, there were some 525 horse-drawn streetcar lines in this country, and more than 100,000 horses were used to pull their rolling stock. New York City's Third Avenue Line alone used 1,700 animals. Some large city carbarns made the only recorded attempt to mechanize, partially, the laborious and tedious grooming required to keep stabled horses in good condition. They introduced rotating grooming brushes, driven by flexible shafts attached to motors.

Each streetcar horse was on duty about four hours out of the 24, during which time it hauled a car not more than 15 miles, occasionally hitting a dizzy six miles per hour where the going was easiest. The rest of the time the horses spent idle periods in their stables – resting, sleeping, eating about 30 pounds of hay and grain each day, and periodically being groomed and shod.

Some streetcar lines sold their horses after about four years of service, replacing them with new, young, vigorous animals. As draft horses generally went to work at the age of about five, the retired horses usually were then some nine years old – late middle age for a horse. But great variability in longevity and vigor is true of all living things, the horse not least. Thus, one Chicago car line that kept careful records had an animal in service 22 years, to the ripe old age of 27! When retired, this veteran had worked on 8,545 days, and had hauled cars a total of 102,540 miles, or slightly more than 12 miles per working day, on the average.

In the foregoing section, it was told how horses were sometimes motive power for, and alternately, passengers on the old canal boats. Similar arrangements were occasionally used on hilly streetcar runs. On long downhill stretches, the horse climbed aboard, into a stall provided on the back platform; while the car coasted down by gravity, the animal rested for the hard haul back uphill. Such an arrangement could be used only on fairly gentle downgrades, however, for on steep slopes, or for sudden stops, the driver depended a good deal upon his horse to stop the car. In fact, when the first power-driven streetcars were built, their brakes were copies from those of the horsecars. These brakes proved to be totally inadequate and had to be redesigned, thus demonstrating the extent to which horses provided the decelerating action for horsecars coming to sudden halts.

The year 1872 was a black time for the horse-propelled street railways, as for all urban horse users. That year an epizootic of equine influenza, originating in Canada, swept into New England and New York, thence through the Middle Atlantic States, into Louisiana, and finally to the West Coast, destroying vast numbers of horses in its swath. In Philadelphia, some 200 horses died daily. In New York City, it was estimated that upwards of 18,000 horses were ill at the height of the pestilence. One New York streetcar line briefly hired crews of men – down-and-outers – to move its cars. Thus, fleetingly, this center of enlightenment witnessed the spectacle of men being hauled by men. This mode of transportation is usually regarded as a form of degradation and is ordinarily thought to be confined to the Orient with its jinrikishas, and the Atlantic City boardwalk with its rolling chairs.

Balls of Fire

The great Boston fire of November 9 and 10, 1872, with its loss of 14 lives and destruction of 776 buildings and personal property valued at $75,000,000 got

* "The Other Three," The Technology Review, **60**:159 (January, 1958).

out of hand because of the outbreak of horse influenza. How disastrous a fire covering 67 acres could be, during a horse epidemic, becomes clear when it is realized how much depended on the horse. Until well into the Twentieth Century, the Boston Fire Department – as all city fire departments – relied solely on horse-drawn engines, hauled by teams of horses weighing 1,200 and 1,600 pounds apiece. A team of these animals, responding to an alarm, tore through the streets at a full gallop, pulling a fire engine and crew weighing four tons. Starting springs were employed to get this vast weight rolling. The horses always were kept bridled, in open stalls. They were trained to leap to the shafts of the engine when an alarm sounded; their harnesses were suspended overhead, ready to be dropped into place. Within 30 seconds of an alarm, the engine was on its way.

Because of the violent physical demands made on fire horses, they never lasted for more than seven or eight years of service at the most, and then were retired to less demanding duties. Small communities, whose fire equipment did not require a full-time team, often kept horses on call at the local livery stable. One drawback of such a practice was that after some service at this assignment, the horses, ever creatures of habit, would bolt for the firehouse for the rest of their lives whenever an alarm sounded, even after their fire days were over and they had been assigned to sedate jobs, such as hauling peddlers' wagons or the carriages of wedding or funeral parties. The horse's good memory was sometimes useful, but often could be most annoying.

What's Wrong with Horses?

The foregoing highlights of the horse's heyday have brought out some of the shortcomings that, in time, made the draft horse obsolete. Although this beast thrives on a relatively inexpensive ration of oats and hay, it needs a lot of both, whether active or idle. Any horse is usually fed about a dozen pounds of hay daily per 1,000 pounds of body weight. The oats ration depends on the amount and kind of hard work to be performed, and ranges from about 10 pounds for carriage horses to 15 pounds for heavy draft horses per 1,000 pounds of horse. As we have seen, this input of fuel usually provides one horsepower for only about four hours out of the 24.

But a horse does not gain full size and strength until it is five or six years old; and during its early useless years it eats about as much as if it were working. The animal is next at its best for only the ensuing five years or so, then starts to decline in vigor – although some animals may remain useful to 15 or 20 years of age, and occasionally, as we have seen, even longer. Assuming a working life of 10 years, though, it is clear that a horse must be fed, housed, and tended for 15 years to obtain this 10 years of work output. And remember that, during the 10 working years, the animal is on duty only one-sixth of the time. Obviously the horse is an inefficient power-generating device!

Then, too, horses need constant skilled attention from human beings; and such services are expensive. The animals must be bred, helped through the perils of parturition, trained, protected from disease and treated for illnesses, housed, provided with bedding, groomed, and shod, their teeth tended, and their bulky excrement disposed of. Training alone demands a vast investment of human skill and time.

Higher Education

Remember that the horse is essentially a wild animal that readily reverts to the feral state when liberated in a suitable environment, such as the plains of the western United States or the savannas of British Guiana. Hence each new foal must be painstakingly "gentled," accustomed to the ways of man, and taught its necessary skills and tasks. Teaching a young horse to "lead" – follow a man holding its halter – alone requires eight or more half-hour lessons, begun when the animal is a few months old. The next lessons are devoted to teaching the beast to "yield" a foot; that is, to lift a hoof, stand still, and let a man handle the hoof as required for the necessary ritual of shoeing. Two men are usually needed for these lessons.

The next step in the horse's education is undertaken when it is about a year old. This is a prolonged and tedious procedure, usually requiring the services of two men, to accustom the horse to harness or saddle and to the bit, and to patiently teach it to respond to the reins and to voice commands, as required in the performance of the relatively simple maneuvers that are expected of the animal. These lessons are continued over the early, nonworking years of the horse's life. The precise amount of human time invested depends on the patience and skill of the trainer and on the educability of the individual animal, but at least the total hours required are many.

Temperamental and Timid

Variation in educability brings us to a most troublesome characteristic of the horse; its individuality. Standardized machines may be relied upon to perform fairly uniformly; but each horse is a law unto itself. According to their lineage, some of the animals are mostly gentle, others mostly wild and vicious; but all have their unpredictable moments, and each has an individual disposition.

One inherited characteristic all horses share, however, is an extreme and foolish timidity. The primitive wild forebears of the modern horse had only one protection against danger; rapid flight. This is still the response of the horse to danger; and danger to this animal means anything unfamiliar. Hence the well-remembered scene of bucking, shying horses and runaway teams. Horses are frightened by any sudden, unexpected auditory or visual stimulus. Unfortunately the horse's eyes are so arranged that it can see to the rear about as well as to the front; hence it is startled by glimpses of the unfamiliar from any quarter. The blinders – leather flaps alongside the eyes – commonly worn by harness horses, reduce this hazard somewhat, but do not eliminate it.

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HORSE POWER

(*Continued from page 310*)

Horses learn by repetition; by being rewarded with food when they do what is wanted, whipped when they do otherwise. Thus they learn merely to carry out the will of the driver, never to perform anything useful to mankind on their own initiative. The horse's limited intelligence – its "one-track" mind – is in part exploited by handlers. A horse that refuses to be led by its bridle is turned to one side; it becomes so engrossed in this maneuver that it forgets its disinclination to budge, and is soon under way. Conversely, runaways were sometimes stopped by merely turning them from a straightaway course.

The horse has a memory of sorts; it must of course remember the simple lessons that enable it to perform its appointed tasks. Who does not remember the milkman's horse, that in time learned to make all the stops of the route with no guidance from the driver. But the horse's memory combines with its extreme timidity to become a shortcoming. Once frightened by a particular sight or sound, it is forever terrified by this stimulus. Thus when electric streetcars first came into being, overhead wires or underground slots for the power lines, or even properly shielded third rails, were unknown. The current was carried either by each of the two rails as opposite poles of the circuit, or by a naked third rail. One reason why such arrangements were unsatisfactory was that they often inflicted painful, though usually not lethal electric shocks upon hapless horses. Once an animal had fallen victim to this terrifying indignity, it never again could be persuaded to cross streetcar or railroad tracks. This was a crippling handicap to the usefulness of any city horse, as in those days metropolitan streets were networked with trolley tracks.

The great Nineteenth Century horse influenza epizootic was a unique event; but all horses are continuously subject to a wide variety of infectious, parasitic, and degenerative diseases that are at best only partly controlled by the skills of veterinarians. The horse's skin, chafed by its harness, and its hoofs, bearing the stress of its weight and working drive, are subject to various special ills. A peculiar health hazard of the horse stems from the fact that it has no vomiting reflex. Hence if it inadvertently swallows toxic plants or other seriously unwholesome substances, it cannot regurgitate and hence may succumb.

Vested Interests

There are always some people who stubbornly refuse to co-operate with the inevitable, and every step of the horse's fall from favor was sturdily and articulately resisted by vested interests, including wagon and harness manufacturers, stable operators, and horse breeders. When smooth asphalt paving began to gain in use for city streets, to provide joltless passage for the new, fast-moving automobiles, organized demands arose from the horsy people for retention of Belgian blocks – those rough cobblestones that provided a bumpy upper surface on which horses' hoofs

(*Concluded on page 314*)

Hot Water

One of the three C-E LaMont Hot Water Boilers being installed at Forbes Air Base, Topeka, Kansas.

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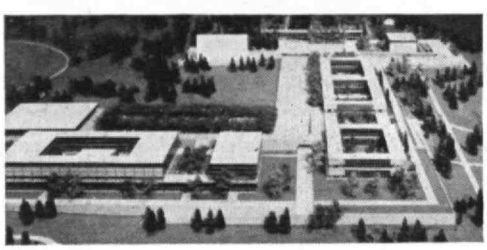

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HORSE POWER

(*Concluded from page 312*)

could get a good purchase. The first street railways and elevated railways were propelled by steam locomotives. Again a concerted wail arose from the horse interests because the strange-looking, noisy steam engines, belching smoke and steam, and with flying driving rods, sent runaway horses scattering in all directions. A compromise was arranged in the use of "dummies," or locomotives with the shell of a passenger car built around their exteriors. For many years these devices pulled the elevated railways of New York until the roads were electrified. Although just as noisy as regular locomotives, the dummies looked enough like the familiar passenger car to fool most horses, and to reduce substantially the incidence of runaways.

Draft Horses — a Rarity

Until fairly recent times, a Horse and Mule Association of America, Inc., maintained headquarters in Chicago and intensively propagandized for continued use of these animals for motive power on American farms. But despite all of the special pleading through the decades, the draft horses — expensive, malodorous, troublesome, temperamental, dangerous although timid, disease prone, and not very bright — has become a rarity in this country, and before long may well disappear into total oblivion.

BUSINESS AND EDUCATION

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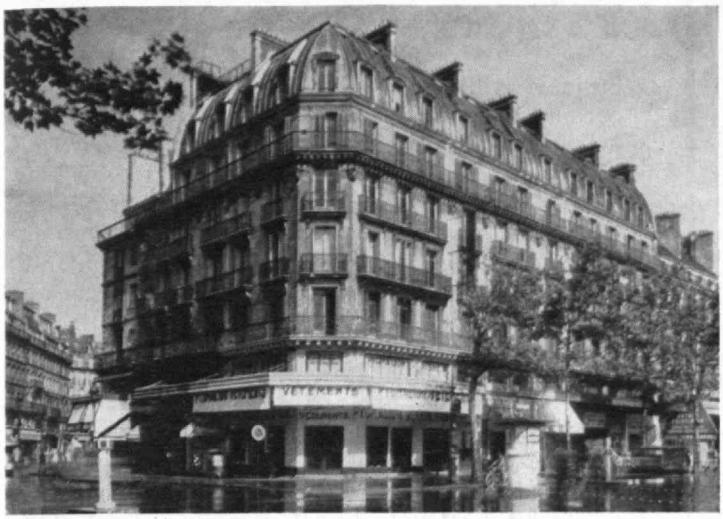
ducing. Moreover, support from business should be of the type that pays its full share of costs. Industrial grants may be a blessing to colleges when they pay the total costs of education for the project for which the grant is made. But grants that meet only a fraction of the direct costs of education, and none of the overhead or indirect costs, will surely send the college president out on a scouting mission, hat in hand. The Ford Foundation, with its mammoth grants, has already demonstrated one way in which business profits can find their way back into education. Many companies have established scholarships. Others, such as the General Electric Company and International Business Machines Corporation, offer generous provisions to help employees further their higher education.

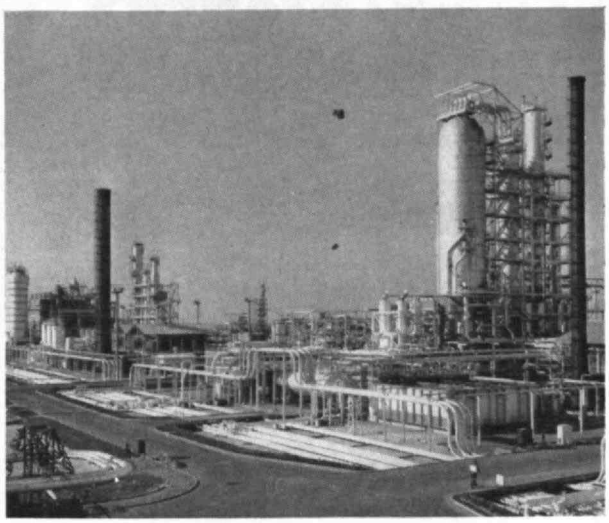
Undoubtedly other kinds of machinery will be established in the future for expanding this kind of aid. The important thing is that the basic work has been done; the thinking of businessmen and educators has undergone the alteration necessary to allow for such co-operation.

This moving together of what were once two sharply divided worlds is not without its troubles, of course. There are many observers who imagine an unfortunate result. They fear that, as business and education become more and more closely associated,

(*Continued on page 316*)



Headquarters of SFTL



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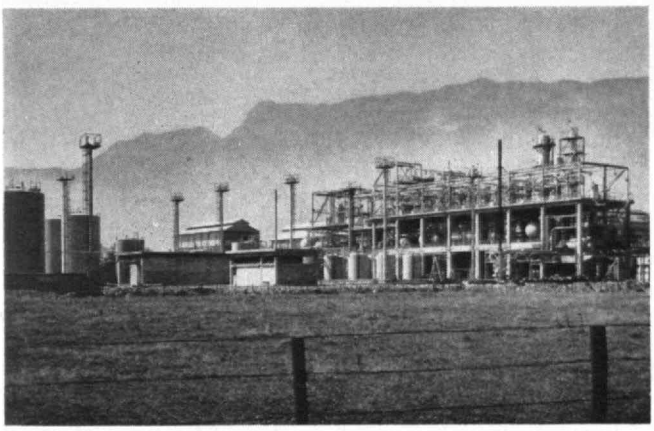
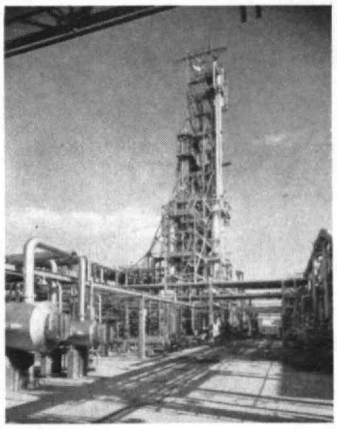
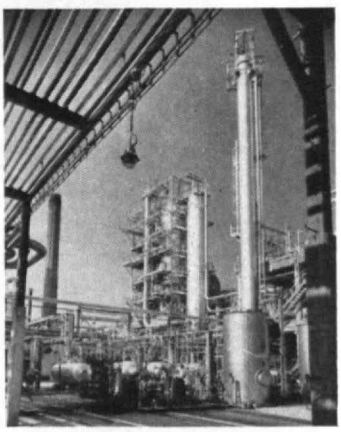


Phenol-Acetone Plant



Ethylene Plant



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BUSINESS AND EDUCATION

(*Continued from page 314*)

business will take over education. Education will become "commercialized." The liberal arts and the humanities will gradually be shoved off the curricula to make way for "practical" studies – engineering, accountancy, economics, retailing, and other business specialties.

How well justified is this fear? In my opinion, it is not justified at all. Even in the unlikely event that business one day did get in a position to order educators about, no such thing would happen.

True, there is a shortage of engineers, and business would like to see more of these professional persons taught and graduated. Occasionally business firms seek graduates with bachelor's degrees in the expectation that such men will be immediately productive as soon as they are put on the company's payroll. By and large, however, business recognizes that the function of the colleges is to instill habits of thought, an intellectual curiosity, and a professional attitude, so that a man can build a professional career on firm foundations he acquired in college. Business recognizes that it must devote part of its activities to training men for their professions, and certainly business is much better able to provide industrial training than are the colleges.

But there is also desperate need for men trained in disciplines other than those of science and engineering, and this need is crystal clear to forward-looking businessmen. They recognize the need for persons trained in law as well as engineering, in humanistic endeavors as well as scientific, and in medicine as well as the "practical arts." Alexander Pope remarked long ago that the proper study of mankind is man. This is business' proper study, too. In the last analysis, the products and services created by business are created for people. If business cannot hire men who have studied men, business will be in bad trouble.

It is very easy to be cynical about business, to poke around and find a profit motive behind everything business does. It is much harder, but also much more rewarding, to see businessmen as men instead of walking ledger books. Most of them are educated men; many are scholars. To them, the teaching of man to mankind is fully as important as it is to educators.

I suspect, in fact, that many businessmen share with me the view that there is too much vocational specialization at the college level today. If this is a defect in our present educational system, it can be corrected. There are several ways in which our educational program might be modified and many able minds are devoting a good deal of time, energy, and thought to needed improvements.

Perhaps it would be better to put more emphasis on vocational training in high school. At the end of high school or a two-year community college, those who do not wish to go on to higher learning would be ready to step immediately into good jobs. Those who do go on to college could be introduced into broader fields of learning. Their vocational education

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would be a secondary part of their college careers instead of the primary one.

In this way, business would get what it really wants: men with a broad knowledge of many fields built on a vocational base. True, business needs specialists. But it does not particularly want the kind of specialist who knows nothing and sees nothing beyond the narrow confines of his specialty. Business wants men who can see and understand all the many factors of a problem, technical and human. This kind of man can best be developed, it seems to me, by making his education narrower at the start than in the later stages, by slowly broadening his view as he matures, even up to the graduate school level.

Education for business is in the final analysis education for management, and management leadership requires men of vision and strong intellectual powers. Business has given strong support to adult education for management, and many educational institutions have attempted to "cash in" on this interest by starting management courses that are poorly conceived and badly administered. It is hoped that the survey of the whole subject of training for management, sponsored by the Carnegie Corporation, will shed some light on this problem, although its findings will not be made public until sometime in 1959.

In the meantime, it should be evident to every businessman and educator that any roadblocks in the way of bringing business and education closer together must be removed. Two areas that are probably more psychological than factual are the businessman's distrust of the word "liberal" and the educator's over-use of the word "humanities." There is a good deal of evidence that while the educator is trying to define the humanities, the businessman is putting them into practice, with ever more liberal pension programs and all the other management "fringe benefits" that are the envy of the educational world.

The climate is improving, but much more must be done if business and education are to solve their mutual problems for survival.

TREND OF AFFAIRS

(*Continued from page 298*)

ing, but it is much more revealing when coupled with the study of information theory.

In his address, "Beyond Nuclear Physics," Dr. Livingston stated that energy greater than that which science extracts from the atom's nucleus lies hidden in the particles which make up the nucleus. Exploration of these particles is the principal purpose of the huge accelerators which have been built and are being built, said Dr. Livingston. Even more powerful ones are being planned to carry on research, according to Dr. Livingston, who added:

Particle physics goes as far beyond nuclear physics as that went beyond atomic physics and chemistry. We are

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(*Continued from page 318*)

just at the threshold of exciting new discoveries about the fundamental particles of which the world is composed. Our basic goal is to learn the nature of matter itself.

If in the future some useful application to human needs comes from these beginnings, it will only be repeating our past experience and will again justify our faith in the ultimate utility of basic research and the search for knowledge.

The field of particle physics is basic research. There is no known area of practical application at present. The motivation of the university scientists is the search for knowledge about nature, at one of the extreme frontiers of science. The challenge is dramatic to an extreme, and advanced students are flocking into this field of science for their graduate studies and thesis problems.

The university is a proper location for such basic research, but because of the large apparatus requirements it is necessary to seek governmental support. All of us in the scientific departments and the institutional administrations are aware of the essential need to keep the scientific planning and management free from stultifying governmental controls.

At the luncheon, Sir Robert referred to the Russian's launching of its two Sputniks as "a beneficent Pearl Harbor." Believing that the roots of war are now growing, just as roots of the Battle of Britain and

(*Continued on page 322*)

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TREND OF AFFAIRS

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Pearl Harbor were growing in 1938, he urged that greater attention be given to the nation's intellectual achievements. He left the impression that a nation whose families can afford more than one automobile and a television set can pay for its necessary educational expenses.

In the afternoon, Professor Schmitt opened the technical papers with his address on "New Frontiers in Molecular Biology." Dr. Schmitt related how giant squid, caught off the coast of Chile, are helping to disclose the biochemistry of all living things. In his speech, Professor Schmitt summarized various important developments in biological research and commented:

> The remarkable advances of modern molecular biology are a natural result of the application of physical and chemical methods of biology. The reaction is, so to speak, a spontaneous 'exothermic' one which, given enough time, technology, and tenacity may be expected to get to the bottom of the physical and chemical basis of life – at least at the lower levels of the micro-organism or the cell.
>
> This present period of highly profitable expansion of molecular biology may indeed come to be known to historians of the life sciences as the "classical age."

Speaking on "Twentieth Century Physics in the High Schools," Dr. Little stated that by 1960 more than 100,000 American high school students can be initiated into new concepts of physics. This is the target of a task force of teachers and scientists centered at M.I.T. – a group which is devising ways to bring physics education up to date.

A new course has been developed by the Physical Science Study Committee, and it is now being tested in eight high schools. Next summer, teachers from the eight schools, working with college and university physicists, will give instructions in this new physics course to 250 teachers attending National Science Foundation Summer Institutes at five colleges.

Many of these 250 teachers will introduce the course into their own schools next fall. It is hoped that they can give instruction to 2,500 teachers in similar institutes during the summer of 1959. And in the fall of 1959, at least 50,000 students will have a chance to study the kind of physics that is needed for dealing with the modern world of satellites, atomic energy, and hydrogen power.

Additional information on the work of the Physical Science Study Committee was given in The Review in the article "Educational Methods and Today's Science – Tomorrow's Promise" by Professor Jerrold R. Zacharias (July, 1957, page 501); and on page 250 in the Trend of Affairs section of the March, 1958, issue.

Highlight of the day's notable events were the addresses given at the evening banquet by the Institute's leaders – M.I.T. Acting President Stratton and Dr. Killian, Special Assistant to President Eisen-

(*Continued on page 324*)

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TREND OF AFFAIRS

(*Continued from page 322*)

hower. Dr. Stratton emphasized that until very recently, engineering and technology rested far more heavily upon the practical arts than upon science itself. But, continued the Institute's Acting President, in addressing the Washington audience:

In our national concern to stimulate science, we may be overlooking and even neglecting the vital role of the engineer in our national progress. Engineers are not merely the draftsmen and plumbers of science. Our planes, our missiles, our great weapons systems, the stupendous growth and development of industrial processes are all the direct products of American engineering.

It is the American engineer who has been the chief architect of our industrial development, and the new industries that are springing up on every hand – and almost overnight – as a result of new advances in fundamental science. The applications of atomic energy alone are opening wide vistas of industrial development.

The engineer must have a feel for materials, a concern for cost, an understanding of the factors of weight and size, an appreciation of the problems of maintenance and repair, and, above all, an unfailing sense of responsibility toward his client and the public good.

As we move increasingly toward the theoretical and scientific in our engineering training, we must also concentrate on preserving these other qualities in the profession.

Speaking on "Underwriting the Future Strength of American Science and Technology," Dr. Killian stated:

I do not believe that we have lost our technological leadership nor that we are predestined to lose it in the future – provided we do not fail to remedy our weaknesses. We have great strength, we have great resources. . . . We continue to be outstandingly strong in nuclear physics, in solid-state physics, in polymer chemistry, and in high-speed calculating machines.

The nation's requirements for sustaining and augmenting our research effectiveness were listed as follows:

The first of these is the need to make the adjustments in the level of support of research necessary to offset inflation and to meet new needs and opportunities.

(*Concluded on page 326*)

TREND OF AFFAIRS

(*Concluded from page 324*)

Second, we need to stabilize the support of research by both public and private agencies. Starts and stops, *ad hoc* commitments, and modification of research programs have at times kept the national effort off balance, and have occasionally served to dissipate our efforts rather than to augment them.

Third, we seek to achieve a national policy and program for the provision of large scientific instruments, as for example in nuclear physics. Such a national policy and program seems essential if we are to achieve the best distribution of our financial resources. . . .

One of our most immediate tasks is to find mechanisms to make more generally known to the scientific community the availability of information already in hand. While we have problems of collection, we have greater problems in distribution. . . .

Next, we face the requirement that our American schools of engineering and our institutions of technology command more understanding and support. We witness the much-needed mobilization of national understanding and effort on behalf of medical education. We must achieve a comparable national effort in behalf of schools of science and technology, where inadequacy can be as perilous to the national welfare and safety as inadequate medical education. . . .

Because science is required for the maintenance of military strength and because it has made spectacular contributions to the development of weapons, it has come to be thought of with disproportionate emphasis on its military significance. This distortion needs correction, and it is heartening to note current efforts to re-emphasize the humane values of science and to underscore its immense contributions to the good life and the good society.

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THE PRODUCTS OF THE MIND

The world we live in is in large part the product of the scientific thought and accomplishment of the past, translated into engineering achievements. Whether we continue to go forward depends on whether the scientific curiosity, the imagination, the careful thought, and the logical analysis of the past, upon which today's technical achievements were built, can exist and flourish in the environment of the new world.

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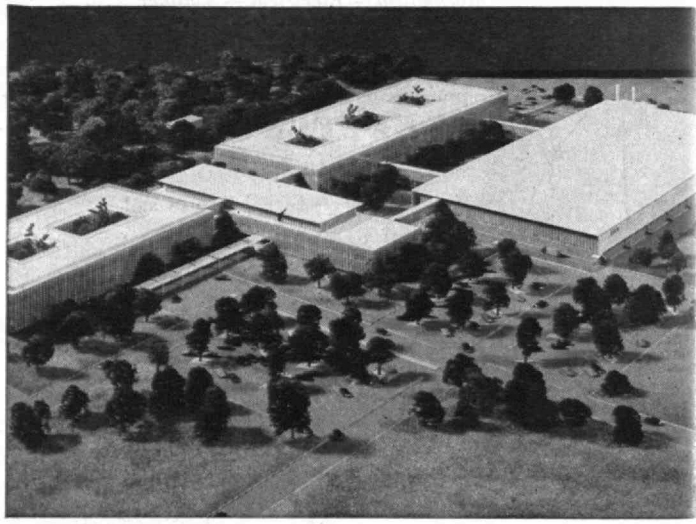
Sidney L. Simon

Dr. Sidney L. Simon
Assistant to the President

Dr. Sidney L. Simon



Pictured above is our new Research and Development Center now under construction in Wilmington, Massachusetts. Scheduled for completion this year, the ultramodern laboratory will house the scientific and technical staff of the Avco Research and Advanced Development Division.

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Write to Dr. R. W. Johnston, Scientific and Technical Relations, Avco Research and Advanced Development Division, 20 South Union Street, Lawrence, Massachusetts.

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ALUMNI AND OFFICERS IN THE NEWS

Climbing . . .

In addition to the 21 Alumni recorded on page 296, other Alumni advanced to new posts include:

EDWARD R. HUCKMAN'26 as assistant field sales manager, The Foxboro Company, Foxboro, Mass. . . . C. WESLEY MEYTROTT'27 as a manager, Methodist Hospital of Brooklyn . . . HARLAND P. SISK'27 as president, Family and Children Service, Berkshire County, Massachusetts.

WILLIAM J. KIRK'28 as a trustee, Shareholders' Trust of Boston . . . O. MASON BURROWS'31 as supervisor of process engineering, Refractories Division, Norton Company, Worcester, Mass. . . . JOSEPH T. CIMORELLI'32 as manager of manufacturing in receiving tube operations, entertainment tube products department, Electron Tube Division, Radio Corporation of America.

ALFRED S. ALSCHULER, JR.,'35 as a director, Bank of Highland Park, Illinois . . . GEORGE G. GARTON'35 as chief of the War Games Division, Combat Development Section, Headquarters, U. S. Continental Army Command, Fort Monroe, Va. . . . DANIEL R. CARROLL'36 as division plant superintendent of the Suburban-Diamond Division, Eastern Area Plant, Bell Telephone Company of Pennsylvania.

WENZEL M. WOCHOS, JR.,'38 as assistant to the vice-president and general manager of the Watch Division, Elgin National Watch Company . . . BERNARD G. TREMBLAY'39 as assistant plant manager of the manufacturing operation at Newark, N. J., Federal Pacific Electric Company . . . ABE M. GELBART'40 as director of the Institute of Mathematics, Yeshiva University.

EDGAR J. JONES'40 as vice-president in charge of research and development, Metrix Corporation, Newton, Mass. . . . WILLIAM H. RODDIS'41 as head of the newly formed industrial and prefabrication sales division of the Roddis Plywood Corp., Marshfield, Wis. . . . REYNOLD F. GAMUNDI'44 as general manager, Heater Division, Eaton Manufacturing Company, Cleveland, Ohio.

JAMES F. HIELD'44 as manager of the Peoria, Ill., sales office, The Trane Company . . . CHARLES H. GRAY'46 as managing partner, Hudson and Ingram, architects, Hanover, N. H. . . . MALCOLM M. BITTEL'48 as assistant general manager, Wayne George Corporation, Boston, Mass.

HOWARD F. MARX'48 as chief of engineering research, Temco Aircraft Corporation, Dallas, Texas . . . JAY M. BEDRICK'50 as chief mechanical engineer, Integron, Inc. . . . DAVID I. KOSOWSKY'52 as director of the new Crystal Filter Division, Hycon Eastern, Inc., Cambridge, Mass.

Contributing . . .

Brainpower Quest, edited by Andrew A. Freeman, gives the ideas of 36 eminent men as to how America can best find new sources from which to develop the top-notch scientists and engineers our country needs. Contributors include: EDWIN S. BURDELL'20, JOHN E. BURCHARD '23, and DAVID A. SHEPARD'26. (New York: The Macmillan Company, 1957, 253 pages, $4.75.)

Edited by CYRIL M. HARRIS'45, *Handbook of Noise Control* explains the physics of sound and hearing and techniques for control of various types of noise. Contributors include: HERMON H. SCOTT'30, CHARLES E. CREDE'36, ARNOLD P. G. PETERSON'37, JORDAN J. BARUCH'47, KARL UNO INGARD'50, KENNETH N. STEVENS'52, and RICHARD H. BOLT, Professor of Electrical Engineering. (New York: McGraw-Hill Book Company, Inc., 1957, 1,011 pages, $16.50.)

Celebrating . . .

Among the Alumni to whom birthday congratulations are appropriate this month are three who are due to celebrate their 90th anniversaries, three their 85th, and eight their 80th, as listed below with their respective dates of birth:

April, 1868 — FRED M. MCGRAW'86 on the 10th; MRS. ALBERT P. MATHEWS (JESSIE G. MACRUM)'97 on the 11th; and CARLETON A. READ'91 on the 23d.

April, 1873 — WALTER J. MAYO'96 on the 18th; MYRON L. FULLER'96 on the 19th; and JOSEPH HARRINGTON'96 on the 28th.

April, 1878 — JOHN S. BLEECKER'98 on the 8th; HARRY S. MORK'99 on the 10th; EDMOND F. BRIGHAM'01 on the 13th; WALTER R. KATTELLE'00 on the 16th; RUSSELL H. GLOVER'01 on the 23d; ALLEN T. GRIFFIN'01 on the 28th; CLIFFORD NORTON'00 on the 20th; and LEIGH S. KEITH'00 on the 30th.

With these 14, the rolls of the Alumni Association will include a total of 62 living nonagenarians and 579 living octogenarians.

Obituary

JAMES W. BLACKMER'91, January 10°
FRANK E. NEWMAN'92, October, 1957
ARTHUR H. JAMESON'93, February 3°
CHARLES H. GODBOLD'98, November 10
JULIUS E. NOLTE'98, 1957°
WILLIAM R. STRICKLAND'98, January 12
EDWARD M. TAYLOR'98, October 31°
RUDOLPH TIETIG'98, February 8
LAWRENCE C. SOULE'99, December 16°
HARRY M. HARPS'00, January 18°
SALVADOR MADERO'00, December 17°
LEWIS A. MILLER'00, no date given†
THEODORE A. BALDWIN, JR.'01, December 1°
FARLEY GANNETT'02, January 20°
FRANKLIN T. ROOT'02, September 9, 1957
PERRIE M. ARNOLD'04, November 28°
WILLIAM B. FOGARTY'04, April 29, 1957
CUTLER D. KNOWLTON'04, January 22°
C. EDWARD MCKINNEY, JR.,'04, October 21°
LILLIAN M. TOWNE'04, February 24
EDWIN S. GRAHAM'05, January 17°
FRANCIS M. HILL'05, January 31
THOMAS SHAW'05, January 14°
RALPH T. JACKSON'06, no date given°
EDWARD L. MAYBERRY'06, October 23
RALPH N. SOULE'06, assumed deceased°
EDBERT C. WILSON'07, January 18°
ALEXANDER C. SLOSS, JR.,'08, December 3°
WILLIAM F. GILMAN'09, February 17
CARL W. SOMERS'12, November 26°
BENJAMIN S. MUNCH'13, February 15
CARL N. ANDERSON'14, September 15
ARTHUR B. DEWITT'14, December 27°
PAUL W. SHEDD'14, January 13
HORACE G. STEWART'14, December 24°
CHAUNCEY H. DURKEE'15, February 2°
GALE C. SHEDD, JR.,'15, December 26°
CALVIN TOMKINS, JR.,'15, January 31
AUGUST G. SCHAEFER'16, December 31°
GEORGE M. STEESE'16, November 23°
ARTHUR R. KNIGHT'17, February 1°
DAVID E. PIERCE'17, January 22°
MAURICE E. GELINAS'18, January 9°
WALDEMAR S. MCGUIRE'18, January 24°
JOHN A. PARKER'18, November 24°
J. HAROLD KAISER'19, January 28°
THEODORE F. HOBSON'20, December 25°
HAROLD E. PEEBLES'20, February 9, 1956°
WALLACE A. ANDERSON'22, July 4, 1955
RUSSELL G. BELLEZZA'22, January 13°
ROBERT K. THULMAN'22, February 18
BENJAMIN ALBERT'23, February 2°
HURXTHAL F. FREASE'23, May 22, 1956
MALCOLM JOHNSON'23, February 27
LESLIE B. SANDERS, JR.,'23, February 23
GUY C. ROGERS'24, January 28
WILLIAM J. LIMPERY'25, January 10°
ARTHUR R. MACLEAN'25, January 9°
NELSON D. MALONE'25, January°
RADU I. HURMUZESCU'28, January 31
EDWARD A. FULTON'30, November 12
RALPH AUBREY JEFFERS'30, January 26
BERTRAM H. MACLEOD'31, January 19°
JOSEPH COLLINGWOOD'32, 1953
FREDERICK M. MOSS'32, no date given
GEORGE B. HARVEY, JR.,'34, March 21, 1950
WILLIAM P. BURTON'41, JANUARY 20, 1957°
CHARLES L. HALL, JR.,'41, February 2°
JOHN R. THOMPSON'42, December 18°
HARLAND A. GRAY, JR.,'46, December 30°
JOHN H. ZELL'46, January 5
JAMES NEAL ADDOMS'48, January 31
JOHN J. BENJAMIN'48, February 1
MICHAEL G. DYER'53, February 19

° Further information in Class Notes
† Further information in M.I.T. Club of Philadelphia notes

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Central New York

We met again on January 24 to hear Albert G. H. Dietz'32, Professor of Building Engineering at M.I.T., present an illustrated talk on "Trends in Residential Dwellings."

Nineteen members heard and saw Professor Dietz describe several novel approaches to residential construction, some of which might be considered to be here today, and others of which fall in the "blue sky" category. All of these constructions made extensive use of recent advances made in materials, particularly plastics.

Perhaps the most interesting dwelling described by Professor Dietz was the Monsanto all-plastic house, now standing in Disneyland. Professor Dietz carried us through the design, the fabrication of the plastic parts, the testing, and the final construction of this dream house. He frankly admitted that there is actually one place where wood was used, but he told us that the integrity of the design was maintained by use of plastic glue to join the wood to the structure.

Without doubt the interest aroused by Professor Dietz's absorbing talk would have carried our meeting on for several more hours, if it were not for the fact that a tight schedule required him to be at the airport shortly after his talk. — GREGORY G. GEBERT'50, *Secretary-Treasurer,* 33 Trelign Drive, North Syracuse, N. Y.

Cincinnati

The M.I.T. Club of Cincinnati held a dinner meeting on January 21 for members and guests. Mr. Louis Michelson'40, Head of the Rocket Engine Section of the General Electric Company, spoke on the technology of rockets. Mr. Michelson's group at General Electric has been engaged in the development of the first stage rocket for the Vanguard missile. Some of the subjects he discussed were liquid versus solid rocket fuels, guidance systems, metallurgical developments, the U.S.-U.S.S.R. missile "race," and changing attitudes in the Pentagon. Although Mr. Michelson had to side-step some of the questions for security reasons, he gave a remarkably clear and complete outline of this country's rocket progress.

He pointed out that one of the main things standing in the way of shooting a manned satellite into space is the natural wish of the pilot to come back down in one piece. Everyone agreed that this was a reasonable request.

The question and answer session would probably have gone on until the early morning hours if Gerry Burns'51, Club President, hadn't interceded in the speaker's behalf. Perhaps the greatest compliment to Mr. Michelson came from the Tech men's wives, who normally do not share their husbands' preoccupation with matters scientific: the ladies thoroughly enjoyed the talk!

The M.I.T. Club members, most of whom brought guests, were: Dr. Frank A. Aschenbrenner'54G; Oliver Bardes'21; Charles Bates'57G; William Beckett'34; Donald C. Berkey'42; Edward B. Berninger'50; Dr. Ray Tully Bradford'45; Gerald S. Burns'51; Gordon J. Burrer, Jr., '55; Marvin J. Byer'49; W. W. Carter, Jr., '39; John P. Comer'48; Edward A. Fox, Jr.,'50; Wilton M. Fraser'47; Norman J. Gordon'43; O. Summers Hagerman, Jr., '49; E. R. Hinnenkamp'51; Frank Iskra '48; Edward H. Kruckemeyer'11; Robert A. Keefe'51; Harold C. Leighton'34; Dudley A. Levick, Jr.,'38; George J. Michel, Jr.,'53; Louis Michelson'40; Donald B. Miller'53; J. S. Raffety'22; Frank O. Rickers'22; Arnold J. Rothstein'51; John J. Ryan'35; James S. Stolley'52; Robert B. Schildknecht'30; Charles E. Seifert, Jr., '48; W. G. Seinsheimer'36; J. Wallace Taylor'05; Richard L. Tavis'52; and Val Friedrich, Jr.,'22. — JAMES S. STOLLEY'52, *Secretary,* 11 Beverly Drive, Hamilton, Ohio.

Fort Worth

In keeping with an annual tradition, the M.I.T. Club of Fort Worth, Texas, joined with the M.I.T. Club of Dallas, Texas, for a dinner meeting in December. The get-together was held on the 17th at Amon Carter Field, located between the two cities. Honored guests this year, as in several recent years, were Dean and Mrs. H. E. Lobdell'17, who were en route to Mexico City. Lobby brought us news of Tech and told of plans for the forthcoming M.I.T. Fiesta in Mexico City. As an added attraction, a color movie of the Chance Vought Crusader setting a new Thompson Trophy speed record was shown. In fact, several Alumni from Chance Vought were in Washington, D. C., this same night to receive recognition for the Crusader's achievement. Alumni and their wives thoroughly enjoyed the evening as acquaintances were renewed, and plans were made for another joint meeting next year.

Ralph Uhrmacher'31 was named chairman of a committee to nominate officers for the coming year. Other members of the committee are Robert Gooch'51 and George Sumner'49.

Dan H. Daggett'56G, Chairman of the personal solicitation program for the 1958 Alumni Fund in the Fort Worth region, officiated at a kickoff dinner the evening of February 4, at Colonial Country Club. Vice-chairmen are John S. Prigge, Jr.,'51 and Grady M. Slagle, Jr.,'54G. Other members of the team are Alfred F. Litchfield'46; Timothy M. Brown, Jr.,'52; Marvin W. Bahnman'56; John M. Barney'50; Frank F. Lane'56G; Eddie J. Schwarz'56; T. Guy Spencer, Jr.,'56; James N. Patterson, Jr.,'51; and Hardy M. Bourland'57G. Another fine record of participation is expected this year. — L. M. HAILEY, JR.,'50, *Secretary-Treasurer,* 2801 Creston Avenue, Fort Worth 15, Texas.

Kentucky

The M.I.T. Club of Kentucky began its 1958 program with a dinner meeting January 29 at the Louisville Pendennis Club. Following the dinner a very timely and interesting discussion concerning the work of the F.B.I. was presented by Mr. Orvell Talburtt of the local office of the Federal Bureau of Investigation. Mr. Talburtt emphasized the rapid growth of juvenile delinquency and indicated that any solution to the problem must first begin in the home. Those attending were: Elmer A. Skonberg'29; Richard E. Christie'39; John L. Dawson, Jr.,'44; Allan K. Cook'34; Albert M. Prentiss'25; Ted R. Metzger'50; David R. Goodman'40; Donald D. Dissly'43; George C. Morrissette '35; James R. Kane'44; John D. Harms'48; Mr. and Mrs. Albert Entwistle'26; and Mr. and Mrs. Howard J. Wood'31.

Through the efforts of our president, James R. Kane'44, an "M.I.T. Club of Kentucky Scholarship" was initiated in 1957. The scholarship will be financed from contributions to the Alumni Fund. When contributing to the Fund, specify that the money is to be earmarked for the M.I.T. Club of Kentucky Scholarship. With this arrangement our Club has the means of providing assistance for attending the Institute to high school students in the Kentuckiana area. A committee consisting of Walter R. Weeks'24, Albert L. Entwistle'26, Elmer A. Skonberg'29, and David R. Goodman'40 was appointed to study and recommend rules for the selection of the recipients of this scholarship.

John L. Dawson, Jr.,'44 and Richard E. Christie'39 were appointed cochairmen for the 1958 Alumni Fund solicitation campaign.

The Club is looking forward to a very enjoyable March meeting. Mr. Howard J. Wood'31, E. I. du Pont de Nemours and Co., will be chairman of the program committee. — JOHN D. HARMS'48, *Secretary-Treasurer,* 10002 Old Third Street Road, Valley Station, Ky.

Lehigh Valley

The winter meeting of the M.I.T. Club of the Lehigh Valley was held on February 6, 1958, at the Bethlehem Club in Bethlehem, Pa. We had three M.I.T. undergraduates, nine prospective students, and two high school principals from the area as our guests. 20 members of the Club attended the meeting.

After a social period and a fine dinner, a brief meeting was held; and then Professor Kenneth R. Wadleigh'43, Sc.D.'53, was introduced as the speaker from Cambridge. His topic was "Education at M.I.T. in 1982." He confessed at the outset, however, that he could not predict as far ahead as 1982 but would tell

us of the trend in education at M.I.T. at present and for the next few years. He said that the problem for engineering and scientific institutions is becoming quite difficult because they must strive to prepare the student for both professional life and graduate work and also to educate for engineering evolution as well as for technological break-through. The trend is toward a broader fundamental engineering education; this means that the graduate has received less specific training for industry, and hence industry will have to furnish this training in a sort of apprenticeship. Dr. Wadleigh emphasized that graduate and research programs have been and will continue to be subordinate to the undergraduate program at M.I.T.

The talk was followed by the showing of color slides of the campus, buildings, classrooms, and student activities, including sports. — J. T. ACKER'24, *Secretary*, 154 Langhorne Avenue, Bethlehem, Pa.

New York

The annual Technical Dinner Meeting of the M.I.T. Club of New York was held at the Hotel Biltmore on February 6, 1958, and was a rousing success. This year's subject, chosen by the Dinner Committee, was "Industry's Stake in Atomic Energy." Four of the most prominent men in the field were asked to participate. The moderator was Dr. Manson Benedict '32, recently appointed head of the Department of Nuclear Engineering at M.I.T.; representing the utilities was Philip Sporn, President, American Gas and Electric Company; representing the equipment manufacturers was Dr. Chauncey Starr, General Manager, Atomics International Division; and representing the chemical industry was Dr. Lauchlin M. Currie, Vice-president, Union Carbide Nuclear Company.

Dr. Sporn spoke of the work now being undertaken by the public utilities and pointed out that to date in this country, where we have an abundance of low cost fuel, the immediate outlook for competitive nuclear power is not too promising. Dr. Starr feels that the development work being undertaken by the equipment manufacturers will hasten the day when nuclear power becomes competitive. Dr. Currie spoke of the vast new fields opened up by nuclear energy for the chemical industries and pointed out that many chemical concerns are prospering as a result. The panel was besieged with questions at the conclusion of the formal meeting, and those who attended all felt they had materially profited.

The luncheon programs have proved so popular in some classes that steps are being taken to bolster the attendance of those classes that have not had strong attendance. For those of you who are not familiar with the class luncheon program, each class meets once each month for an informal get-together. If you do not know when your class meets, call Miss Gilliland, Executive Secretary, who is on duty daily at the Biltmore.

Advance ticket sales for the Long Island M.I.T. Club Valentine's Day dinner dance have been so successful that about half the group applying had to be turned away. With membership continuing to grow, your directors are looking into the not too distant future and are giving serious thought to expanding our present quarters. Why not drop in soon?

We wish to report the death of Chauncey Hilton Durkee on February 2, 1958, after a long illness. Mr. Durkee was born in Haverhill, Mass., in 1891 and was a member of the Class of 1915 at M.I.T. — ROGER G. BLUM'41, *Secretary*, 285 Old Colony Road, Hartsdale, N. Y.

Philadelphia

The fine turnout of 150 at our January 28 meeting was rewarded by a completely successful affair. After cocktails and a sampling of the Barclay Hotel's superb cuisine, we enjoyed two top-notch speakers discussing topics of current interest. Dean E. P. Brooks'17 of the M.I.T. School of Industrial Management put his finger on a variety of problems that tomorrow's management faces. R. S. Morse '33, President of the National Research Corporation, followed up by discussing the status of research in the United States. Remarkably, both speakers developed the same central theme and hit it hard. Our major problem for the future, and even now, is to develop improved management concepts that will produce competent and rapid decisions to reduce the lag between invention and production.

Elections were held at the same gathering. H. W. Anderson'15, Chairman of the Nominating Committee, suggested the following slate of officers and executive committee members, which was accepted unanimously: President, Samuel K. McCauley'41; First Vice-president, Kenneth S. Lord'26; Second Vice-president, William H. Bertolet,3d,'48; Third Vice-president, Wiley F. Corl, Jr.,'39; Treasurer, Charles W. Hargens,3d,'41; Assistant Treasurer, Joseph T. Lester, Jr.,'44; Secretary, Herbert R. Moody'41; Assistant Secretary, Lee C. Eagleton'44; and Assistant Secretary, Enno T. Sauer'37. Executive Committee: Henry F. Goldsmith'17; Ralph M. Shaw, Jr.,'21; Constantine Bary '27; Herman Schaevitz'38; John B. Murdock'41; Russell F. Hodges'49; and Charles G. Etter, Jr.,'53G. The officers for 1958 are the same as for 1957. The executive committee is new. Sam McCauley announced that, again, we will be privileged to enjoy the facilities of Longwood Gardens for our spring meeting on April 12. At this writing, the Right Honorable C. D. Howe'07, former Minister of Trade and Commerce (second in command) in the Government of Canada, has agreed to speak.

We regret to announce the passing of a number of our members in the past few months. Our sympathies are extended to their families. They are: Claude A. Anderson'05; Frank A. Browne'06; Kenneth L. Harper'17; Lewis A. Miller'00; Charles M. Phelps, Jr.,'24; and Carl A. Schafer'11. — HERBERT R. MOODY'41, *Secretary*, 8609 Patton Road, Wyndmoor, Philadelphia 18, Pa.

St. Louis

Blame me! I have been your Secretary for at least six months and there has been no peep out of me in The Review. For the sake of those who have missed our meetings for their own good reasons and for those friends of the St. Louis Club now living far away, let me introduce the new officers of the Club.

To preserve chronology, I'll introduce myself first. Paul Ely'44 retired as Secretary-Treasurer of our St. Louis Club at our annual picnic last June 15. Paul moved to Chicago to take a position with the Bell and Howell Co. The board of governors appointed Jim McAllister (that's me) of the Class of 1950 to fill the empty office.

Our January 30 meeting was election night. Al Mendle moved from the vice-presidency to the office of president. Al is a member of the Class of 1938. Succeeding Al as vice-president is Bill Hanpeter of the Class of 1946. I was elected to succeed myself, probably since the books were in the black. Hugh Morrison from the Class of 1948 and Mike Witunski from the Class of 1943 were elected to the board of governors to serve until November, 1960. Without election our retiring President, John Taylor, assumed a position on the board for one year. John is a member of the Class of 1946. Other board members whose terms have not expired are Carroll Hornor'43 and Ken Marshall'47, who have one year left; and Ed Brooks'39 and Tom McNearney'48, whose terms expire in November, 1959. To complete the picture, Bill Hanpeter, our new vice-president, and Elmer Henderson'33 are the two retiring elected board members, along with Bob Keating '42, who now becomes a past past-president.

As a note on our club membership, we have a mailing list of 250 M.I.T. Alumni in our area. In 12 months we held a total of four meetings with 33, 39, 34, and 24 Alumni attending each meeting respectively. We had 67 dues-paying members in 1957; 14 of these were sustaining memberships.

The big event of our year again was the annual picnic. Joe Desloge'12 again was our host by letting us hold the picnic at his beautiful estate, *Vouziers*. Although we had near flood stage rains all week and even in the morning of the picnic day, the sun came out and gave us a wonderful day. The swimming pool rang with the cheers of Tech men and their wives and dates. The heaps of barbecued chicken made our mouths water, and everyone had fun. Thanks, Joe, for your hospitality; we were sorry you could not attend to see for yourself how we all enjoyed the picnic.

Now that I am started at making these reports, I hope that I will be able to continue and to expand them to provide information about the personal lives of our club members. At the next meeting I'll let you know what I have in mind to accomplish this. — JAMES C. MCALLISTER '50, *Secretary-Treasurer*, 806 Thornberry Lane, Kirkwood 22, Mo.

Virginia

The Virginia club was pleased to have Mr. John Pershing, General Manager, Richmond-Petersburg Turnpike Authority, as guest speaker at the winter meeting on

February 28. Following cocktails and dinner at the Commonwealth Club in Richmond, Mr. Pershing spoke on the engineering and legal aspects of public works, with major emphasis on our own turnpike.

Mr. Pershing graduated from Princeton University in 1921 and Harvard Law School in 1924. His presentation was both timely and interesting. Wives and guests accompanied many of the members who attended the meeting. — SCHRADE F. RADTKE'40, *Secretary,* 1106 Lake Avenue, Richmond, Va.

Washington

By the time this is read, the Washington area's first M.I.T. Regional Conference will be history. The Conference has been scheduled for March 1 at the Shoreham Hotel, Washington, D. C. The theme is "The Outlook for Science in America." The program planned for the affair follows. Morning session: Dean George R. Harrison, "What's Ahead for Science?" and Dr. M. Stanley Livingston, "Beyond Nuclear Physics." Luncheon: Sir Robert A. Watson-Watt, "Another Pearl Harbor in the West." Afternoon session: Dr. Francis O. Schmitt, "New Frontiers in Molecular Biology," and Dr. Elbert P. Little, "Twentieth Century Physics in the High School." A reception and dinner featured Dr. Julius A. Stratton '23, Acting President and Chancellor of Tech, and Dr. James R. Killian, Jr.,'26, Special Assistant to the President of the United States. — CHESTER N. HASERT'41, *Review Secretary,* 2475 Virginia Avenue N. W., Washington 7, D. C.

Western Pennsylvania

The second regular meeting of the club year was held Monday, February 10, 1958, at the University Club in Pittsburgh with 34 members and nine guests present. The guests included M. V. Kamath, P. C. Patnaik, D. S. Sethi, and D. N. Gupta, four of 200 members of INSTEP — Indian Steel Training and Educational Program — who are studying at American universities and then going through a training program at several steel mills. They were guests of W. F. Rivers'26 of Carnegie Institute of Technology, director INSTEP.

President Tom Stephenson'45 announced the election of Edward Stoltz, Jr.,'45 as club treasurer by the board of governors. Ed takes the place of Elwood Koontz'36, who has been transferred to Chicago.

After the business part of the meeting, Bill Laird'43, our efficient program co-chairman, introduced Mr. Charles LeRoy of the U. S. National Advisory Committee for Visual Satellite Tracking as our speaker for the evening. Mr. LeRoy gave us a very interesting and timely talk on the work of the amateur tracker and on the various phases of astronomy. Very few of those present realized how many men make a hobby of astronomy and what a large contribution they are making to scientific knowledge. — STUART D. MILLER'32, *Secretary,* 3043 Dwight Avenue, Pittsburgh, Pa. GEORGE M. COLVILL '51, *Assistant Secretary,* R. D. 1, Eighty-four, Pa.

Women's Association

On February 1 the M.I.T. Women's Association held a midday meeting in the familiar surroundings of the Emma Rogers Room, where Charlotte Sage'13 had arranged a delicious luncheon. Among the 28 members and guests we were delighted to find Florence Stiles'22 from Wilmington, Del., and Adelaide Toombs Sundin'47 from Sweden.

Ruth Berman Pitt'39, as Chairman of the Student Aid Committee, commented briefly on the difficulty in locating the women students who need financial assistance. Partly to provide publicity, M.I.T.W.A. will award a prize of $100 to the junior with the highest cumulative rating. The presentation will be made at the March meeting, when the senior women students will be our guests.

Harold L. Hazen'24, Dean of the Graduate School, showed slides taken in September when he and his wife were sent on a two-week tour of oil installations and engineering works in Saudi Arabia (Dhahran), Bahrein, Qatar, Kuwait, and Baghdad in connection with a study at the American University of Beirut. The pictures graphically illustrated the contrast between the pre-oil economy and present-day development of modern hospitals, housing, roads, and dams (in Iraq). — KATHERINE SALISBURY HAZEN'28, *Recording Secretary,* 81 Clark Street, Belmont 78, Mass.

CLASS NOTES

1891

I have to report the death, on January 10, of our classmate James W. Blackmer. The following account of his life and service to the city of Beverly appeared in the January 11 issue of the *Boston Globe:* "James W. Blackmer, former Beverly Public Works Commissioner, died early this morning at Beverly Hospital at the age of 88. An employee of the City of Beverly for 47 years until his retirement nearly 19 years ago, Mr. Blackmer was born in Plymouth on May 7, 1869, and was educated in the Plymouth public schools and Massachusetts Institute of Technology.

"Shortly after his graduation from M.I.T., Mr. Blackmer became an employee of the city's water department as an engineer. He continued in that capacity for five years, and in 1897 was made superintendent of the water department. When the water, street, and park departments were consolidated as the department of public works in 1914, Mr. Blackmer was promoted to become the city's first commissioner of Public Works and received reappointments every two years until his retirement in May, 1939. . . Commissioner Blackmer's duties included supervision over about 175 regular city employees, besides hundreds of others during the Works Progress Administration program. As Public Works Commissioner, he was also a member of the Salem-Beverly Water Supply Board.

"Mr. Blackmer was a member of Bass River Lodge, Number 141; Independent Order of Odd Fellows; the Beverly Chamber of Commerce; the American Forestry Association; and the New England Water Works Association. He was honored at the 54th annual convention of the N. E. Water Works Association at Providence, R. I., for his capable and loyal administration of the public works program of Beverly.

"Besides his wife, Mrs. Marion L. Blackmer, he is survived by a daughter, Miss Huldah Blackmer of Lynn, and several nieces and nephews."

Together with this story, the *Globe* published a fine picture of James. Benevolence, justice, kindness, affection written deep in every line of his countenance; and for 47 years faithful administrator of public services of the growing city of Beverly — Beverly, the home of the United Shoe Machinery Corporation with business connections in every large city the world around. What a man to remember, and he got his start professionally with M.I.T. Class of 1891.

And here is a lovely letter from our vital, exuberant classmate, William Faitoute Keene of Wychwood Gardens, Great Neck, N. Y., who lives in the summer in northern Vermont. Always refreshing to hear from you, Bill, and we all say to you: the best of luck, and hope you get your license!

"My dear Brown: I received your letter, and I was sorry to hear Harry Young died, but I never was very intimate with him. My best friends were Elisha Lee'92 and Woodruff Leeming; both have long since deceased. As I am in my 88th year and have never been without an automobile of my own for the past 55 years and I still drive long distances, I am fearful of being told when my license expires in the coming September that I will not be able to renew same. I fear my good record in driving will be of no avail. However, I will probably be forced to obtain a chauffeur. I am still very active and feel pretty chipper. I trust you feel the same, as I presume you are about my age.

"We are having a moderate and pleasant winter in this locality, which suits me to perfection. I hope to go to Vermont for next summer, where the air is very beneficial, as I have the last seven summers, up in the mountains. With best wishes, cordially yours, Bill Keene."

And now for this letter from our dear friend Harrison Cole, grower of cranberries out on Cape Cod: "North Pembroke, Mass., January 17 — Dear Channing: I have been trying to think of what to write to you of my feeling on hearing of our loss of Harry Young, but I know it is the same as all of us feel, the loss of a friend. We are decreasing in number, but I hope there will be reunions for years yet; and I know no better place than your piazza. Sincerely, H. I. Cole."

And now, just as I am mailing these notes for the April issue of The Review, comes this letter from our dear classmate Linfield Damon: "J. Linfield Damon, Park Square Building, Boston 16, Mass., February 11 — Dear Channing: Am pleased to hear from you. I think I can arrange for the meeting of the Class at The Brookline Country Club, same as last year, if you find the members are inter-

ested and will come. I don't recall the price per person last year; presume it will be the same, and will check on it. Has the Class any resources? Trust you are well. Sincerely yours, Linfield."

And so, dear fellows, the final question is: what can we do about our annual reunions? Harry Young has carried the ball for many years, what wonderfully fine gatherings, really great occasions in the first country club established in these United States! Harry did it all and met the bills for all expenses except the small contributions we made at our annual gatherings.

Now it is up to us. Can we continue, or must we fold up?

The next reunion would be June 14 in connection with the annual Alumni Technology celebration. Will you fellows just write me and give me your thoughts, and will you do it now? — WILLIAM CHANNING BROWN, *Secretary*, 15 Forest Avenue, Hastings-on-Hudson 6, N. Y.

1893

We regret to report the death of another classmate. A letter has been received from Mr. John D. Jameson of Tucson, Ariz., advising that his father, Mr. Arthur H. Jameson, died on February 3, 1958, at his home in Branford, Conn. The son sent a brief account of the life of his father, which is as follows.

"Arthur H. Jameson was born in Boston, Mass., November 9, 1870, the son of John and Mariette (Thompson) Jameson, descendants of early New England settlers. He was educated in the public schools of Boston and Amherst, Mass., and thereafter at Phillips Academy, Andover, Mass., Class of '88; at Harvard, where for two years he was in the Class of 1892; and finally at the Massachusetts Institute of Technology, where he took his degree in Chemical Engineering in 1893. After an apprenticeship in the laboratories of the Colorado Fuel and Iron Company, Pueblo, Colo., Arthur Jameson joined the Cleveland Linseed Oil Company in Chicago. At that time he met and later married Rebecca Jameson, a distant relative. In 1901 he first became interested in the manufacture of steel castings at Phoenixville, Pa., a business in which he spent almost all of his active business life. For a brief period he was in Attleboro, Mass., where his work concerned the refining of gold and silver. In 1903 he joined the staff of the Malleable Iron Fittings Co., Branford, Conn., with which concern he was continuously associated until his retirement on January 1, 1949, except for the years from 1918 to 1929 when he worked successively for the Bayonne Steel Castings Company of Bayonne, N. J., and the Deemer Steel Castings Co. of New Castle, Del. In the early years he was particularly interested in the application of the Bessemer converter to American steel casting manufacture.

"During these years of active industrial life, Jameson also took a keen interest in the scholarly and institutional aspects of the steel casting business. A member at various times of the American Institute of Mining and Metallurgical Engineers, the American Iron and Steel Institute, the American Foundrymens Society, and the American Society for Testing Materials, he was particularly interested in the work and progress of the latter, which he joined in 1917. Through these associations he was enabled to express on a broad basis his convictions that quality and service were the foundations of good steel foundry practice.

"His wife died in 1920, but Jameson is survived by all his five children: John D. Jameson of Tucson, Ariz.; Mrs. Clark Winter of Pittsburgh, Pa.; Thomas H. Jameson of Katonah, N. Y.; Mrs. H. Gordon Stott of Wilmette, Ill.; and Dr. A. Gregory Jameson of New York City. There are eight grandchildren.

"Following his retirement in 1949, Jameson set forth to see the available parts of the world he had always hoped someday to visit. In the following six winters he traveled extensively in the United States, Mexico, and the Caribbean Islands; in North Africa, Europe and the British Isles, and the fringes of the Near East. He was en route from the Canary Islands to Dakar, near Senegal, when he was stricken on February 6, 1956."

A memorial service was held on February 8, 1958, at Trinity Church in Branford, Conn.

Mail for Mr. George B. Glidden should be sent to Centre Street, R. F. D., North Dighton, Mass., rather than to 99 Chauncy Street, Boston. — GEORGE B. GLIDDEN, *Secretary*. GERTRUDE B. CURRIE, *Assistant Secretary*, c/o Fay, Spofford, and Thorndike, Inc., 11 Beacon Street, Boston 8, Mass.

1894

One of the real rewards of a class secretary is to receive letters from members of the Class who have long been silent or apparently disinterested, and then come to the rescue with interesting accounts of their careers and activities, and thus prove that there has never been any lack of loyalty either to the Class or to the Institute. Such a letter has come from Frederick M. Mann, a graduate in Architecture, whose life since leaving M.I.T. has been a succession of important and successful enterprises in his profession. Coming to the Institute after having taken a degree in Civil Engineering at the University of Minnesota, he enrolled in the Department of Architecture, received his S.B. degree with our Class, and followed it by a graduate year, receiving his S.M. in 1895.

Of his next activities, he writes: "Then, looking for almost any kind of a job, I went to the University of Pennsylvania as instructor in architecture. In 1902 Washington University at St. Louis announced that it proposed to establish a school of architecture and invited me to undertake the project. This was difficult, as my heart was set upon getting into regular practice. Influential friends in the profession urged that it was opportunity for missionary work in architectural education in the West. After doing hard work there for several years and the school had begun doing well, I was invited to go over to the University of Illinois where, though it was the oldest school of architecture in the West, it was being felt that their teaching of architecture was falling behind the times. I went to Illinois in 1910, revised the curriculum and secured a number of new men for the faculty; and I think new life and vigor was injected.

"I had been at Illinois only three years when the University of Minnesota came forward with the proposal to start a new school of architecture at that Institution. I was particularly interested because I had taken the degree in Civil Engineering there before I went to Tech to study architecture. I went to Minnesota in 1913 and remained there until I was retired in the year 1936. At Minnesota we kept in close, friendly relations with the Department of Architecture at M.I.T., and in a few years began to send students there to study for the master's degree. Lawrence Anderson'30, now in charge of the Department at Tech, was one of them.

"On the outside I did some practice all along. I became much interested in the then rather new field of zoning and city planning, and served on the City Planning Commission of Minneapolis for several years. Over the years I was architect for churches at Overbrook and Lansdowne near Philadelphia; Wilmington, Del.; Roanoke, Va.; Waco and Austin, Texas; and other buildings of some importance, including the Memorial Stadium at the University of Minnesota.

"In 1902 I was married to Grace Hitchcock of Somerville at a double wedding at which Grace's sister Mary and George V. Wendell'92 were the other participants. I think some of the older Tech men will remember George as Dr. Wendell in Physics, and afterward professor of physics at Columbia University. Grace and I had three children: Dorothy and Eleanor are now married; and Fred, Jr., followed in his dad's footsteps, taking an S.M. in Architecture at M.I.T. in 1940. He is now supervising architect at the University of Washington at Seattle.

"Upon my retirement from the University of Minnesota in 1936, the idea of an out-of-door life in California appealed to me; and now I am a prune farmer near the town of Healdsburg, 70 miles north of San Francisco. Professionally I have occasionally acted as preliminary adviser on building projects, and I served for a number of years on the Sonoma County Planning Commission. I would recommend the climate here and the beautiful country around."

This interesting letter demonstrates anew how great the influence of M.I.T. has been in the advancement of the professional work in technical fields which the Institute has fostered in its history. Clearly our distinguished classmate did much during his 40 years of teaching and professional work to promote better instruction in his chosen field in a large area of the Middle West, where he in a sense was a pioneer two generations ago. We of the Class will certainly regard him as belonging to the group of classmates, some of whom have been written of in these notes during past years, who have had the qualities of leadership and fine citizenship and have carried high the banner of our Alma Mater. We congratulate with much pride.

A telephone call from Arthur M. Tracy, who was associated with our Class in its undergraduate days, has much pleased

the Secretary. Tracy has been for many years associated with the Cambridge Cement Stone Company; and although past the age of 86, he still attends to business. He now lives at 1800 Commonwealth Avenue, Brighton, Apartment 18. He reported that his company had supplied most or all of the stone used in the construction of the new Compton Building at M.I.T., and was very proud that he could thus be associated with the great recent development of the Institute. Tracy is another loyal son who has not been active in class affairs but is deeply interested in the progress of his Alma Mater. — S. C. PRESCOTT, *Secretary*, Room 16-317, M.I.T., Cambridge 39, Mass.

1895

At Columbia University's Graduate School of Journalism a $70,000 grant from the Alfred P. Sloan Foundation is being used to establish an advanced Science Writing Program. Promising young writers and reporters will be invited to spend one year at the university with virtually all of their expenses paid. Most of the fellowship recipients will have scientific interests as well as three to six years of writing experience.

Commenting on the grant, Dean of the Graduate School of Journalism Edward W. Barrett said: "While only four to five full fellowships a year can be financed under the initial grant, it is hoped soon to expand the program to provide for 10 fellows a year. The school also hopes later to experiment with writing courses for selected young scientists and to initiate short-term conferences for established science writers."

Last October at a dinner of the National Fund for Medical Education at the Waldorf-Astoria, President Eisenhower addressed 1,400 corporation executives and medical educators in behalf of the Fund's support of the medical colleges. The dinner honored Alfred P. Sloan, Jr., former chairman of the Board of General Motors Corporation and President of the Alfred P. Sloan Foundation, who received the Frank H. Lahey Memorial Award for his service to the cause of medical education.

From Judson C. Dickerman come reports of enjoyable life in Charlottesville, Va., at 1701 Rugby Avenue.

Your Secretary is glad to report that he returned home on January 28, after three months in the hospital with a fractured hip, and is now recovering very well. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

At the February Alumni Meeting the Classes of the Nineties were at one table that was filled so that the only '96 man was seated at the '07 table with a solitary member of that Class. The papers on the high school teaching of physics and demonstrations of laboratory experiments were at Kresge. Until now there has been little change since the Harvard experiments in high school in 1892. No answers were given to the questions proposed on the published announcement of the meeting.

Victor Shaw writes: "Am still in very good shape in all ways, although I retired from all active trailmaking north of the Arctic Circle back in 1938. Nowadays I take walks, and hammer this mill to complete my 'Trailways' for the benefit of many nephews and nieces in my family, whom I've never seen yet." Miss Gates is spending this, her 10th winter in Florida, at Daytona Beach. Bradley Stoughton is the only one who has seconded Will Coolidge's motion to have a class dinner at New York, where Admiral Bakenhus suggests the Yacht Club. Henry Hedge says he wouldn't go and thinks most of us are too old; and a few phone calls show agreement with him. Unless there is more support for a dinner, perhaps it had better be postponed for the present.

Joe Harrington, cited as "Modern Pioneer" by the National Association of Manufacturers, was called to aid the government in the use of coal during World Wars I and II; he retired in 1955. Joe sends the following brief note: "For four years I traveled in Central America and Mexico for my brother's company, which made dynamite, much used in mining. But in 1900 I decided I better come back and look for something that could develop into a lifetime occupation. Well, I landed in Chicago, where my oldest brother had his business. It wasn't long before I ran into Herman Poppenhusen (M.I.T.'96) who, with his brother, had just acquired the Green Engineering Company, making a mechanical stoker for burning coal. It was a flop, and Herman asked me to design a stoker that would really work. I did just this, and in 13 years they had sold thousands. I designed about 600 installations, making the 'Green Chain Grate' probably the best known and liked stoker in this country at that time.

"Then times changed. I had developed an entirely new and different stoker, and made a deal with the Brady Foundry Company to build it. I called it the 'Harrington Stoker,' and before I sold it, had installed about 300 installations. Then I thought the market needed a small but fully mechanical coal stoker; and so I designed what was named the 'Whiting Stoker,' which was made by the Whiting Corporation. It worked fine and before I sold it I had made 200 installations: All through these years I had been active in both city and government service. I am very proud of my son, Joseph Jr., who is an M.I.T. Doctor of Science; and his son, Joseph 3d, who is now a freshman at Tech." — JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline, Mass. HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline, Mass.

1897

The following communication has come from one of our most enthusiastic survivors, who complains that we mention his name too frequently in our class notes; so in deference to his wishes, it will be labeled "anonymous." However, we doubt if there will be many who do not recognize the source.

"As a slight answer to your plea at Christmas time, Proctor Dougherty was busy as usual in Washington; particular project not stated. Tom Weymouth is still much confined to indoors, his arthritis bothering considerably.

"Irénée, outside of liberal giving to the Alumni Fund, has given M.I.T. $209,-687.50. This is officially reported now on Alumni Fund sheets, but it has no effect on class standing. Last report made us first in percentage of class giving and fifth in average gift. Bully for Irénée!

"With income tax figures looming, snow to shovel, a political letter or so, and some manufacturing improvements buzzing, time goes all too fast. Don't think I would be happy in Florida now. Several friends who had planned for a southward trip have had to cancel it or alter materially on account of limit of transportation. Does not sound like a 'depression.'

"If you have any influence with publicity activities, get them to keep before the public the number of broken promises the Russians have made. There are too many letters appearing in publications that we 'ought to agree with the Russians on disarmament.' Apparently there are many people who have not encountered a liar. [We have no influence — but an excellent suggestion. — Ed.]

"When you get back, we expect a letter from you telling what you and Anne saw of the missile station at Cape Canaveral between sun bathing and playing Scrabble. That will help our class notes. End of sheet, so no more now."

The following news note appeared in *Science*, December 20, 1957: "Irénée du Pont of Wilmington, Del., has given $35,000 to Dickinson College to equip and furnish a science library in the $650,000 C. Scott Althouse science building that is now under construction on the campus and scheduled for completion next August."

Another letter of interest was forwarded from the Review Office and was received too late by your Secretary to appear in an earlier issue: "Hotel Royal Palm, Park Avenue at Montcalm, Detroit: I note my change of address because I didn't want to lose a copy of the beautiful Technology Review. It's such a wonderful magazine, and I love it.

"It was only about two years ago that a short history of my life was in The Review, so it would be pretty soon to have something else. About ten years ago, I was very lame from a broken ankle, and I was alone; so I moved downtown after selling our house. I wanted to be near enough to go downtown and so my friends could see me when they came down.

"After recovering and with the lameness gone, I have moved into a pleasanter hotel. I do not have any work, but I belong to a good many clubs and places I like to go, so still live 'downtown' with no real reason for moving. I am sorry not to give you real news, but I am beyond the age of really doing very much. Sincerely, Helen E. Keep." — JOHN P. ILSLEY, *Secretary*, 26 Columbine Road, Milton 87, Mass.

1898

Behind the chiffonier in our bedroom there hangs a picture, given to me by Maurice Delano of Company C, the prize company in our freshman year of military

drill. In the rearmost row stands a young private named Caspary. Fix your attention on Caspary. Here is a regular Horatio Alger story. Graduating from M.I.T., Caspary got in on the ground floor of Lazard Freres, a Belgian firm, importers of dyes and chemicals. (The Secretary lunched with Fernande Lazard in the Bois at Paris, France, in 1924, and never realized that he was doing business with a partner of a classmate.)

When Caspary passed on, a few years ago, his wife having predeceased him, and there being no children, he left an estate, variously estimated at $10 to $15 million, to be distributed by his lawyer-executor for educational and philanthropic, especially medical, purposes. You will remember what a stir the passing of Caspary, leaving such a large estate, occasioned in the class notes. Wrote Lester: "Where have we been all these years, Ed? Asleep?" Energetic Ralph Jope secured from the executor a generous contribution for M.I.T.

How many have read the article in the *New York Times* of February 27, 1957, from which we quote in part? "$5,500,000 is Given for Study Center. Rockefeller Jr. and Caspary Estate Finance Four Buildings for Graduate University. The Rockefeller Institute has received gifts totaling $5,500,000 that will be used for the construction of a modern living and study center for its graduate university. The gifts announced yesterday are $3,000,000 from the estate of the late Alfred H. Caspary, and $2,500,000 from John D. Rockefeller, Jr., whose father founded the institute. The Caspary estate gift is reported to be the largest single contribution ever made to the institute from outside the Rockefeller family. It will be used for the construction of an auditorium, a president's house, and a graduate student residence hall."

For further details consult the article in the *New York Times* of January 21, 1958, from which we quote in part: "Rockefeller Institute Adds Residential, Scientific and Recreational Facilities at Its East Side Site. Four Buildings Added by Institute Here. The Rockefeller Institute has just completed four buildings of contemporary design and luxurious modern interiors on its campus at the East River. The buildings and their landscaping, set on the 12-acre grounds between Sixty-third and Sixty-eighth Streets, cost $5,500,000. They are intended more for social and administrative use than for scientific purposes in the affairs of the biological research institution.

"The new buildings include: A hemispherical auditorium, entirely faced with tiny blue mosaic tile. It seats 500 persons for scientific lectures. A 13-room $600,000 town house with landscaped terrace on the water's edge. The one-story house is for Detlev W. Bronk, President of the institute.

"The estate of Alfred H. Caspary, a stockbroker, provided funds for the president's house and $1,000,000 for the auditorium and a small adjoining office building. The auditorium and the office wing together are called Caspary Hall."

From high private in the rear rank of Company C to a codonor with John D. Rockefeller, Jr.!

Our distinguished classmate, Roger W. Babson, has been interested for 10 years or more in the control of gravity. He has followed up his interest, as usual, in a big way. Various write-ups have appeared in the '98 class notes during the past years, describing the elaboration of "Gravity Research," as the project has been called. Through the courtesy of Mr. George M. Rideout, Vice-president of Babson Reports, Wellesley Hills, Mass., and President of Gravity Research Foundation, New Boston, N. H., we have received a circular concerning the 1958 Awards for Essays on Gravity and a write-up concerning Gravity Day, 1957, from both of which we quote in part. Mr. Rideout, it will be remembered, was the genial and competent chairman who presided at the technological session of our 55th reunion at Babson Park, Wellesley Hills. The quotes are of special interest in view of the present widespread and keen interest in rockets, satellites, nuclear fission and fusion, the force of gravity, and space travel.

"1958 Awards for Essays on Gravity. In 1958 for our ninth year the trustees are offering five awards for short essays for the purpose of stimulating thought and encouraging work on harnessing gravity. The stipulations follow: (1) These awards will be made by us on June 2, 1958, for the best 1,500 word essays on the possibilities of discovering: (a) some partial insulator, reflector, or absorber of gravity; or (b) some alloy, or other substance, the atoms of which can be agitated or rearranged by gravity to throw off heat; or (c) some other reasonable method of harnessing, controlling, or neutralizing gravity. . . ."

"Gravity Day, 1957. . . . The second speaker of the morning was Mr. Roger W. Babson. He gave a short review of the change in the character of the essays that have been submitted over the years. At first the prizes were given for less substantial papers, but in the past few years prizes have been given for papers from some of the leading physicists of this country and of foreign countries. . . .

"Mr. Babson pointed out that all prime sources of power, such as the steam engine, the dynamo, and so forth, depend on a differential of energy, such as steam energy in the cylinder or electric potential energy in the dynamo. He still believes that some arrangement of the atoms of matter in an alloy will produce a gravitational differential which may be utilized for the production of power or the saving of energy.

"Mr. Babson was impressed by the point of view of the Princeton group. They maintain that in subatomic or nuclear particles there might be some means of balancing the force of gravity. Positrons have been suggested, as they are constituents of antimatter."

George Cottle, Fred Jones, and the Secretary attended the Midwinter Alumni Association Meeting at M.I.T. on February 4, 1958. The subject of the meeting was, indeed, timely: "A Break-Through in Science Teaching." We were greatly impressed. The write-up of the meeting in the pages of the Technology Review will repay thoughtful perusal.

'98 classmates will be especially interested that the final speaker of the evening was our distinguished honorary classmate, Dean George R. Harrison, who was optimistic on the world situation and described graphically the revolution that we are passing through.

The office of the Alumni Association has advised us of the passing of Edward M. Taylor of Wilmington, Del., on October 31, 1957. George Cottle recently called on the phone for Julius Nolte at Scituate, Mass., and was informed by Mrs. Nolte that her husband had passed on several months ago. We have, as yet, no further information concerning these classmates. — EDWARD S. CHAPIN, *Secretary*, The Eliot, 370 Commonwealth Avenue, Boston 15, Mass.

1899

In a recent issue I reported that George H. Priest's house in Florida had burnt down and that he had lost all of his personal belongings. That note evoked a letter from him, telling me that the catastrophe happened five years ago and that he has built a new house, which he describes as 100 feet long with 2,500 square feet of floor space, located at Oklawaha, Fla. He also has a well equipped workshop in which he spends a lot of time. (George has always been a "do-it-yourself" artisan: several years ago while driving east for Alumni Day, I stopped at his home in Brattleboro, Vt., and found him shingling the roof of his garage.)

In the early days, after graduation, George was gas engineer for Stone and Webster. Eight years later, he became manager of the Brockton, Mass., Gas Light Company, which he built up until it was one of the largest gas companies in New England. In 1927, it was purchased by the C. H. Tenney Company. When George retired in 1935, he was the subject of a write-up in the local paper, a write-up which he prizes and which will be handed down to posterity when his daughter is married in May. In 1931, he became a partner of Frederick T. Fisher, whose father had been Secretary of the Interior, in a cattle ranch in Vermont. (Fancy George as a cowboy!) This ranch was sold in 1938, and 10 years later Fisher bought an 8,000-acre ranch in Florida. George was invited down for a month's fishing; so he built himself a small trailer and arrived in Florida in January, 1951, with a canoe on top of the jeep. After seven years, he says he is "well rooted"; life in Vermont was getting a little too rugged, for he lived on a hillside about five miles from the center of the town. George's philosophy is keep working as much and as long as you're able, and do not worry about what you can't help.

Word has been received of the death, on December 16, of Lawrence C. Soule. A letter sent to his last known address, asking for details, was returned by the Post Office. — BURT R. RICKARDS, *Secretary*, 349 West Emerson Street, Melrose 76, Mass.

1900

If any of you are making plans for a visit to New England this summer, please

remember that our annual class reunion will be held at The Pines, Cotuit, Mass., on June 17 to 19. This follows Alumni Day, which comes on Monday, June 16. This reunion will follow the pattern of those of the last seven years, which have been so much enjoyed. We hope that a number of you who have not come before will be able to be with us this year.

Stanley Fitch is apparently enjoying himself and keeping busy, in his retirement, by travel. In a recently received "Report to Family and Friends on the Year 1957," he tells of a trip which he made early last year. Leaving home (Cambridge) in January by plane, he went directly to Honduras. This was his second visit to this country. He had been there in 1954 to visit with his stepdaughter, whose husband, Whitey Willauer, is the U. S. Ambassador there. (Reference to this trip was made in these notes in February, 1955.) Stan's six weeks' visit seems to have been crowded with entertainment and excursions. With headquarters at the embassy in Tegucigalpa, the capital of Honduras, short trips were made in all directions including mountains, the Gulf of Mexico coast and outlying islands, the Pan American Highway, the Honduras Agricultural College, and the Pacific Ocean coast. He visited ranches, sawmills, tropical forests, and banana plantations. He was entertained by (but did not necessarily participate in) fishing, swimming, skin-diving, water skiing, and dove hunting. He must have had a busy time! On leaving Honduras, Stan went to Guatemala, visiting Guatemala City and Antigua. From there he flew over Mexico to Los Angeles, spending a few days with relatives on Balboa Island with a trip to Ensenada, Mexico. He then flew to Tucson for a week's visit with side trips which included Nogales, Mexico, and the Tumacacori Mission. From Tucson he flew directly home, having been away nine weeks. Later in the year he spent a week with Harry Grant'00 on the latter's farm in Jericho, Vt.

Harry M. Harps died at his Nantucket home on January 18, 1958. Those who attended our 50th reunion will remember him as being there. We have heard little from him over the years. Our Class Book of 1910 reports him as being principal assistant engineer with Herbert C. Keith, consulting engineer, 116 Nassau Street, New York, N. Y. The *Inquirer and Mirror* of Nantucket gives the following: "Mr. Harps was born in Nantucket on June 19, 1877, the son of John and Ella B. (Macy) Harps. He graduated from Massachusetts Institute of Technology in 1900 with a bachelor of science degree in Civil Engineering. Until his retirement from active business in the late 1920's, he specialized in the construction of bridges, working with the late Ralph Modjeski as a bridge engineer in Oregon, Missouri, and Cuba. During World War I he served as a captain in the Army Engineers. He maintained his residence in Utica, N. Y., until his retirement. He returned to Nantucket in the early 1930's, making his permanent residence here with his wife, the former Irma Sheppard, who died in November, 1946; and with her sister, Miss Ada Sheppard. In 1949 Mr. Harps was elected president of the Proprietors of the Nantucket Athenaeum, a position he held until January, 1954. He also served as a trustee of the Nantucket Cottage Hospital and was elected vice-president of the Hospital Corporation in 1945. He served as president of the Corporation from October, 1945, until July, 1946." We would be glad to receive any further information about Harps's professional career.

We have received word of the death of Salvador Madero of Parras Coahuila, Mexico, but have, as yet, no further information about him. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

1901

The notes for this month will be very brief as the Class Letter, which should have gone out the first of February, has not yet been received (February 11); and I depended on your replies for the April notes. However, I have two items which should prove of interest.

Colonel Theodore A. Baldwin, Jr., I, died on December 1, 1957. The following information comes from clippings received from the Alumni Office. "Colonel Theodore A. Baldwin, Jr., died Sunday in New York City of a heart attack. He was 79. He had lived in Washington at frequent intervals between 1912 and 1937, when he retired from the Army Air Corps after 30 years' service. He was a member of the Army-Navy Club here. He first saw military service during the Spanish-American War, when he was wounded in Cuba while accompanying his father, General Theodore A. Baldwin. Colonel Baldwin was commissioned in 1907 after graduating from M.I.T. In his early military career he was a pilot of lighter-than-air craft. He served in the Air Section of the Army Signal Corps during World War I and commanded Orly Field at the war's close. He is survived by his wife and three children. The funeral was in the Fort Meyer Chapel, followed by interment in Arlington Cemetery."

Henry Chambers, I, sent me the following letter from Tucson, Ariz., dated February 1: "Dear Ted: As a fellow Class Secretary I appreciate your appeal for news. It was our good fortune to find Phil and Mrs. Moore on the Golden State Limited from Chicago. We picked up the thread of our stories and carried on from Castle Hill to date. Since our arrival, a week ago, they have gone to their favorite ranch some 50 miles south, and we have all been getting acclimated by way of old-fashioned head colds. A letter from Bob Derby telling me of old friends of his who might be here at the Inn happened to hit upon the mutual friends who had been former shipmates of ours on the *Coronia* and the ones from whom we learned of this unusual Inn. I believe that Bob plans to make a circuit of South America shortly on the *Gripsholm*." — THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N. H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

1902

Our classmate Farley Gannett, who but recently retired as president of the firm of Gannett, Fleming, Corddry, and Carpenter, Inc., of Harrisburg, Pa., to become chairman of its board, died suddenly on January 20, in Washington, D. C., while attending the meeting of the American Road Builders Association. Gannett started his professional career shortly after graduation with the Board of Public Works of Harrisburg, where he was engaged in the design and construction of sewers, filtration plants, and so forth, becoming assistant engineer, Board of Public Works. In 1905 he became associated with the Water Supply Commission of Pennsylvania as chief engineer. In 1915, he organized his own engineering firm, which at first specialized in the construction supervision of water supply and sanitation projects. Later his firm became interested in hydro power work, and still later entered the field of roads and bridges. Today the hydraulic, valuation, construction, and sanitary divisions together produce about half of the firm's volume of business; and the highway and bridge division the other half.

The firm has expanded steadily and now has a staff of 500 people and occupies four buildings in Harrisburg, two owned and two rented. It does not confine its work to the United States but has been responsible for many projects in the South American countries, especially in Argentina, Chile, and southern Brazil.

Gannett maintained membership in the Engineers Society of Pennsylvania, of which he was an early president; the Pennsylvania Society of Professional Engineers; the American Society of Civil Engineers; the American Water Works Association; and the American Road Builders Association. He was also a member of the Cosmos Club of Washington and the Beaumont Hunt of Harrisburg.

He is survived by his wife, Mrs. Janet R. (Saunders) Gannett; three daughters, Mrs. W. R. Jones, Mrs. Jane Behney, and Mrs. George H. Booth, all in the Harrisburg area; a sister, Miss Alice Gannett of Cleveland, Ohio; seven grandchildren; and two great-grandchildren.

The Midwinter meeting of the Alumni brought out but four '02 men — Moore, Patch, Philbrick, and Williams. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem Mass.

1903

By this time you should have received notice of tentative plans for our 55th reunion. If you have not already done so, please send in your reply promptly so that definite arrangements can be concluded. Charles B. Cox, I, has advised that his present address is 503 Orondo Avenue, Wenatchee, Wash. Frederic A. Olmsted, X, is now living at 218 Chapman Drive, Corte Madera, Calif. We would like to know more about our west coast classmates.

Ike Atwood and your Secretary attended the Midwinter Alumni Dinner. Our responsibilities as Alumni were emphasized in the stimulating program for science teaching which followed. Gleason has moved from St. Petersburg to 222 Seventh Street, Northwest, Winter Haven, Fla., near Lake Howard, for the rest of the season. — LEROY B. GOULD, *Secretary*,

36 Oxford Road, Newton Centre 59, Mass. F. A. EUSTIS, *Treasurer*, 131 State Street, Boston 9, Mass.

1904

A card from the Review Office says that class notes for the April number are due, and once again we have nothing to report but deaths. This winter has taken a heavy toll from our Class, and we wish we had some cheerful news to dilute the bad. Usually at about this time we hear something from the sun bathers in Florida extending sympathy to the snowbound northerners, but if the newspapers are accurate Florida has been a good place to avoid this year.

P. M. Arnold, a graduate of Course II, started his career with the Vermont Copper Co. at South Strafford, Vt., and later was with Brooklyn Edison and Tennessee Copper Company. In 1912 he designed and built a pyrite treating plant at Roanoke, Va., and later one at Wilmington, where he became chief engineer and vice-president. These plants closed in 1932; and Arnold transferred to Graham Transport and Oil Co., where he remained until retirement in 1951. He died November 28, 1957, at Newark, Del., leaving a widow and two sons, Lieutenant Colonel S. N. Arnold of Albuquerque, N. M., and R. W. Arnold, a member of the Famous Artists Studio, Westport, Conn.

Cutler D. Knowlton died at Rockport, Mass., January 22, 1958. For 35 years he had been employed by the United Shoe Machinery Corporation as designer and inventor. He leaves a widow, a son, three married daughters, eight grandchildren and two great-grandchildren. The Knowltons celebrated their 50th wedding anniversary last summer.

We learned from the Alumni Office that C. Edward McKinney, Jr., died October 21, 1957, at his home in East Orange, N. J., but no details are available regarding him. — EUGENE H. RUSSELL, JR., *Treasurer*, 82 Devonshire Street, Boston, Mass. CARLE R. HAYWARD, *President* and *Acting Secretary*, Room 35-304, M.I.T., Cambridge 39, Mass.

1905

Robert F. Luce, I, just about hits the nail on the head when he explains the reason why '05 men of today do not write the secretary. I quote: "When a person is retired it is not at all difficult to keep postponing decisions from day to day until a certain amount of time has elapsed." I'll buy that, Bob, but it seems just as easy for those who have not retired. So I'll just keep on digging for news. Here's what Bob says about his experiences: "Since leaving school I had been an officer of the U. S. Coast and Geodetic Survey, retiring in August, 1947, with the rank of captain — Navy rank. I stayed retired for about a year, and as I felt altogether too active for that sort of thing, accepted a position on the faculty of the Civil Engineering Department of the nearby University of Maryland, teaching various civil engineering subjects, and, incidentally, enjoying it very much indeed.

"Having in my younger days worked for nearly a year with the Massachusetts State Highway Commission, my interest was, and had been for a long time, in highway design, layout, and construction. Consequently, the courses which I taught embraced the highway field, as well as that of photogrammetry, geodesy, surveying, and mapping, which were based on my Coast and Geodetic Survey experience. I retired from teaching last June, and at present am living at 3130 Wisconsin Avenue, Washington 16, D. C., with my wife, whom I married back in 1915, and a son who graduated last June from George Washington University, in this city. My son, Robert James Luce, is not an engineer, but is interested in music and history. I meet very few classmates here in Washington, but do see quite a few Tech men from time to time, and do enjoy very much the class notes in The Review."

In January Ruth and I spent three weeks visiting daughters and grandchildren in Springfield, Mass.; Mountainside, N. J.; and Newark, Del. While in New Jersey I reached a few '05 men by phone. George Rhodes, VI, at Glen Ridge is still retired from business but not from activity. He lives with a daughter and several grandchildren, has nine of the latter, and is just waiting for the snow to get off the links so he can start his daily eighteen. Marshall G. Meriam, II, of Nutley is still working, in the advertising department of a firm in East Rutherford. Says he is quite well. Colonel R. S. Beard, I, was at the University of California showing the results of his research in higher mathematics to some of the faculty there. Talked with his daughter, who says Bob is in good health and spirits. Joseph C. Field, VI, of Maplewood reported that his health was not too good — diabetes. Retired but able to get around. Tried several times but could not reach Jim Whitmore or Harry Charlesworth; probably in Florida enjoying the good weather. It's rather easy to think of Florida as the mecca for retired people, but consulting our records I find that we have more classmates permanently living in California than in Florida.

My last phone call had a sad ending. Trying to get Tom Shaw, VI, I reached his daughter, who informed me that Tom was buried the day before. He died suddenly on January 14 at Park Ridge, N. J., although he had been in poor health for several years. I have four different notices from newspapers concerning Tom's life. I quote from the one which seems the most interesting to his intimates: "Thomas Shaw, 74, retired inventor at the Bell Telephone Laboratories, died yesterday in Hackensack Hospital after a long illness. He lived at 27 Glendale Road, Park Ridge, N. J. Mr. Shaw had been a member of the Bell System from 1905 until his retirement in 1948 and was an early specialist in the development of equipment for 'loading' telephone lines — a technique that led to the long-distance telephone call. He was the author of numerous technical articles on the method and was granted 21 patents in this field. Mr. Shaw was born in England and came to the United States in 1895. He joined the American Telephone and Telegraph Co. in 1905 after receiving a bachelor's degree in Electrical Engineering from the Massachusetts Institute of Technology. In 1907, he became a member of the company's development and research department in New York and began the work that contributed to the opening of the first transcontinental telephone line in 1915. He went to Bell Laboratories in 1934. Surviving are a son, Richard B. Shaw; a daughter, Mrs. John Blagg; and two grandchildren."

These notes seem to be mostly about Course VI; therefore, a story about Frank Brownell is in order. Frank retired several years ago, as assistant general manager of the Manitoba Telephone System. Just recently I received a copy of *The Telephone Echo* of December, 1957, published by M. T. S. It shows a picture of Frank, apparently happy and in good health, and gives his Yuletide message to Pioneer Life Members of the company. It is a masterpiece of philosophy on "What is a Friend." Too long for publication here, but if anyone wishes a copy I'll transcribe and send it. Mrs. Edwin M. Lines writes that she is giving to the St. Paul's Church, Dedham, Mass., a stained glass window in memory of her husband, who died in 1957. It will incorporate the Yale, Cheshire, and M.I.T. seals. Ned was senior warden and treasurer of the church for many years. Ted Steel, VI, is at the time of writing these notes recuperating from a cataract operation. Mrs. Steel reports that he is in good health except for poor eyesight.

Willard E. Simpson, I, writes to report that Edwin S. Graham, III, died at his home in Graham, Texas, on January 17, 1958. Willard mentions having seen Graham only once since graduation; and that at about the time of our 50th reunion, attempting to get Graham to accompany him to Boston. He states that Edwin was apparently THE Mr. Graham of Graham, Texas, apparently owning the town and keeping busy keeping it running. He left a wife, two sons, and five grandchildren. The rest of the letter is so interesting that I must ask the good graces of the editor to copy it in the May issue. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Cohasset, Mass.

1906

The Midwinter Meeting for the Boston area, as you doubtless learned from the write-up in the March Review, was unusually interesting and timely, giving us a report on the progress to date in the new secondary school physics course being developed by the Physical Science Study Committee. The exhibits of experimental apparatus in Kresge lobby were fascinating and an eyeopener to the throng inspecting them both before and after the talks. By invitation, many of those present were members of secondary school staffs or school committees, and your Secretary had as an enthusiastic guest the principal of the Waterford (Conn.) High School, John E. Palmer, a graduate of William and Mary. The '06 attendance, however, was regrettably small; only Sherley Newton and Chester and Ruth Hoefer showed up.

During dinner I had a chance to learn

a little more about the traveling Hoefers' seven months' round-the-world trip, and just in time for these notes Chester sent me the story. To quote: "In October, 1956, we bought Pan American round-the-world tickets and flew across country to Los Angeles for a brief stop to see Disneyland, Will Rogers Ranch, and so forth, before flying up the coast to San Francisco for the nine hour flight to Honolulu. We stayed there a week, and I warn you not to stay longer or you will never leave that heavenly spot! Refueling at Wake Island, we took the long flight across the Pacific to Tokyo. A month in Japan was all too short for visits to the fabulous temples of Nikko, the Park of 1,500 Lanterns at Nara, the Kabuki theatre, the strange puppet shows at Kioto. (Incidentally, Ruth told me how the small Japanese children contribute their mites to a fund that is used to take them in busses to visit their historic shrines and places of interest.) Then on to Hong Kong and the New Territories on the mainland of China. Here a million refugees swarmed across the border when China went Communist, creating a serious problem for the British Crown Colony. But on we went to the shops, to the fishing villages, to the floating restaurant where you select from their tanks the fish for your dinner; from there we proceeded to visit the strange Tiger Bam pleasure parks where legend and religion vie with each other in mammoth figures in strange oriental settings.

"The flight to the Philippines landed us in Manila, when the elegant pre-Christmas parties at our hotel were in sharp contrast to the Japanese horror chambers where General Wainwright was imprisoned in World War II. The next weeks were spent on the history-packed Malay peninsula; Vietnam, Singapore, Bangkok, Burma, and Angkor Wat in Cambodia. It had emerged from the trackless jungle with an amazing record of a great civilization, which even today attracts scientists to daily explorations. India, with Calcutta as the first stop, was somewhat familiar ground; but this time were added visits to our hotel by the Pacha Lama and the Dehla Lama with 140 retainers from Tibet. Later Nehru came for a press conference, followed in a few days by President Prasad. A volume could be written about fascinating India: the temple cities; the pink city; Madras; Bombay; New Delhi, where they are building great modern hotels to accommodate international conferences; the Taj Mahal, the sacred city of Benares; Darjeeling on the border of Tibet where you climb Tiger Hill to catch a glimpse of sunrise on Mt. Everest. Then there is Amber City way up in the tiger-ridden mountains, which we reached by riding an elephant for the final steep climb. India is an inexhaustible source of fascinating scenes and experiences, and it kept our cameras clicking constantly.

"Flying from India to Rome seemed almost like a homeward trek; for we were now on familiar ground, but spent several weeks revisiting Florence, Venice, Rome, Paris, Normandy, Brittany, not forgetting Mme Pollards' famous omelet on Mont-Saint-Michel. Then home to Boston in May, 1957. With the exception of a few side trips by boat, train, or car, we had traveled 124 hours by air and it had taken us around the world in the time it would take a boat to cross the Atlantic." The Hoefers' urge to "see the world" is longstanding; for when he sent in his bit in 1936 for that contemplated history, Chester ended it thusly: "Hobbies are gardening, travel, books, golf, and *then some more travel.* Drive a Packard, but if I were 20 years younger, it would be a Folker Plane."

Rather tardily we report the passing of another classmate. Ralph Nelson Soule, VI, died November 1, 1957, probably at Coral Gables, where he had been living for five years or more. His home address was East Greenwich, R. I. He entered Tech with us, having previously acquired an S.B. degree — where, the records do not show. Some of you who played football may remember him as he was a tackle on the winning sophomore team, but he did not return after that year. The earliest record places him in Detroit in 1913, probably with the Chalmers Motor Car Co., as he was assistant manager of their Service Department in 1915; then in Wickford, R. I., in 1917. The only other known business connection was as sales manager with the F. F. Matheson Co. in Wilkes-Barre, Pa., in 1926. Since 1938 the address has alternated between Florida and Wickford. More details to fill the gaps would be welcome. Just as these notes are ready to mail comes a notice from the Alumni Office of the death — date not known — of Ralph Temple Jackson, IV, in Phoenix, where he had moved a year or so ago. We'll include more details and career next month.

About the time you read these notes Sherman and Bertha Chase will be sailing for England, where they will be in London for a while seeing friends prior to an annual meeting of the British Society, of which Sherm is a member. Then on to Brussels for a meeting of the International Congress of Water Engineers and to take in the International Fair there. Thence for a rest period they plan to go down to Majorca in the Balearic Islands for a week or so, then to Switzerland and up to Copenhagen, returning to England for a motor trip and home in July. Being an expert with movies and Kodachromes, Sherman should have some more very interesting films and slides to show us at the next reunion — so Bon Voyage!

Our worthy president by now could probably qualify as a hospital aide. Alma had the tough luck to take a spill last January, fortunately didn't break a hip, but suffered a leg injury which we hope by April will be completely cured. And by the middle of April you have probably heeded the plea of our Class Agent in his spicy January 15 letter for 100 per cent participation in the current Alumni Fund — and so stopped those two-bit pieces burning holes in your pants. Many a mickle makes a muckle, 'tis said; so if you have procrastinated, please take out that ball point and help boost the '06 percentage column — even if it is only a mickle! — E. B. Rowe, *Secretary,* 11 Cushing Road, Wellesley Hills 81, Massachusetts.

1907

On January 28 I received from our classmate Arthur Christensen of Beaufort, S. C., a brief note with which he enclosed two letters that he had received from '07 men. This very thoughtful act on Arthur's part gave me both valuable documents for our class archives and also some interesting news for these class notes.

One of these letters was from Warren Hastings in Ogdensburg, N. J.; and I am especially glad to have it because many years have elapsed since I have had any information regarding his activities. From 1913 until April of 1956, Warren was superintendent of New Jersey Zinc Company at Ogdensburg. During that time he sank a number of shafts and did a lot of developing to double the mine output. In 1945 his company decided to open property at Friedensville, Pa.; and Warren had the additional job of layout, construction, and development there. He writes that a 1,260-foot vertical shaft required constant advance grouting, despite which water broke through on four occasions. Pumping has been as high as 25,000 gallons per minute, and as Warren says, "That's some water." Pumping now averages about 17,000 gallons per minute. Our classmate had served as mayor of Ogdensburg for 18 years when he quit, due to lack of time. He retired from active business in 1956, and he and his wife spend much of their summers at their lake cottage. He has five boxer dogs and rather large grounds at his home, both of which help to keep him busy.

The other letter was from Laurence R. Davis of 120-17th Street, Paso Robles, Calif., who wrote: "I was very sorry that I missed the 50th reunion, but I was tied up on a trip to see my son. He finished the Mining Course at the University of California at Berkeley in 1956 and then went into the Air Force. He had been in Florida taking his propeller training, was through at the end of May, and wrote his mother and myself to meet him at Port Huron, Mich., where one of his married sisters lives, and drive with him to Big Springs, Texas, where he was to take jet training. So while you fellows were at Boston, I was headed west again. Life has been very good to me. I married a California girl in 1921 and we have two daughters and this son. The daughters both went to 'Cal' at Berkeley and are married: one married a Maine man and now lives in Pasadena, with a daughter and a son; and the other married a Michigan man and they live at Port Huron, with two boys and a girl. The son is not yet 23 and now has less than 18 months of service left. Since World War I, I have lived in California; but during the last few years I worked for Bechtel and Company in power house construction. Now I am retired and split my time between gardening in my back yard and catching up in my reading. My health is still reasonably good; and needless to say, I am enjoying life."

You will recall that in two previous issues of The Review I have mentioned the serious illness of Edbert C. Wilson in Waterville, Maine. On January 20 I received a note from Bert's warm friend, Leverett Cutten of our Class, saying that

Bert's daughter had telephoned to him with the news that her father had died in his sleep on the morning of January 18. I immediately wrote a letter of sympathy to Mrs. Wilson in behalf of both the Class and myself and received from her a gracious reply of appreciation, together with a clipping from a Waterville paper, from which I quote: "Edbert C. Wilson, 73, died early on Saturday morning, January 18, at the home of his daughter, Mrs. Eleanor Gustafson, 13 Pleasantdale Avenue, following years of failing health. He was born in Mercer, Maine, March 22, 1884, and had been a resident of this city for the past 49 years. He was graduated from Bates College in 1905 and from Massachusetts Institute of Technology in 1907. His career as a hydraulic engineer was spent with the Lockwood Company of this city, the Maine Public Service, the Stone and Webster Corporation, and as an independent engineer. He attained the rank of major while serving with the U. S. Army Corps of Engineers during World War I and was active as a reserve officer until recently. He was a lifetime member of the Engineers Association of Maine, and was chairman of the board of trustees of Pleasant Street Methodist Church for many years. He was married to Lucile Goddard in 1908, who survives him. He is also survived by two daughters, Mrs. Hildegarde Lomas of Rochester, N. Y., and Mrs. Eleanor Gustafson of this city; also by six grandchildren and several nieces and nephews." Bert was a substantial Christian citizen, dedicated to high ideals, devoted to his family, successful in his profession. He was an interested and loyal member of '07. — BRYANT NICHOLS, *President* and *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary* and *Treasurer*, 18 Summit Street, Whitinsville, Mass.

1908

The fourth and final dinner meeting of the 1957-58 season will be held at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge, Mass., on Wednesday, May 7, 1958, at 6:00 P.M. Remember, ladies are invited; plan to come and discuss details of our 50th reunion at Snow Inn, Harwichport, Mass., on the Cape, June 13 to 15, 1958. It will help the Reunion Committee a lot if you will reply promptly to their letters so that they will know how many to plan for.

On June 16 Alumni Day will be held at Cambridge. During the banquet, we present our '08 50 Year Gift to the Institute. Have you subscribed to this year's Alumni Fund? Your gift helps to build up our Class 50 Year Gift to M.I.T., so please be generous. Your 50 Year Gift Committee has been busy and reports some substantial gifts from classmates; but it's up to everyone to help. Even though you may have made a token subscription to the Alumni Fund last fall, see if you can't make a second gift in 1958. Remember that M.I.T. did a good job in preparing you for your life work; so show your appreciation by subscribing to the Alumni Fund, your way of saying "Thank you."

The *Engineering News Record* of February 6, 1958, has a very interesting illustrated article by George D. Whittle of Berkeley, Calif., entitled "Precast Sections Make Low Cost Sea Wall." The sea wall was designed by George and installed along the shores of Lake Merritt, in the heart of Oakland, Calif. Look up the article and read it. Harold Osborne is spending several months again this year in Rio de Janeiro, as consultant to the Companhia Telefonica Brasileira, but expects to be home about May 1.

We are sorry to report the death of Alexander C. Sloss, Jr., on December 3, 1957, at his home in Grand Rapids, Mich. How about sending us some news? — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Treasurer* and *Reunion Chairman*, 230 Melrose Street, Melrose 76, Mass.

1909

Since telling about Jim Critchett in the March Review, we have received a communication from Mrs. Critchett in which she contributes much further information concerning Jim's life and the tributes paid to him. "I want to thank you for your very nice letter about Jim. It was one of 200 letters I have had from all over the country praising Jim for his wonderful qualities. I did not need them to tell me what a grand person he was, having been fortunate enough to have lived with him for 47 years; but it was very fine to hear that other people appreciated him, too. To the Class and to you I extend my warmest thanks for your contributions to the Cancer Fund. Jim would be so pleased about that and the many other contributions that have been sent. I have been quite overwhelmed at the number.

"It would be an almost impossible task for me to write every detail of Jim's life, but I will try to write down some things you might like to know. Jim was born in Watertown, Mass., and attended Watertown High, then M.I.T. His first job was with the Illinois Steel. He later went with the Hooker Co. in Niagara Falls and in 1914 joined the Union Carbide. I believe he worked for them for 33 years, becoming vice-president of the Electro Metallurgical Company and several other divisions in 1944 when he retired. During World War II he worked on the metallurgical committees of the War Production Board and the National Academy of Sciences. After the war he retired to Orleans but continued his work with the National Academy of Sciences, in which he was active up to his death. He was a member of Theta Delta Chi, Electrochemical Society (a past president), American Welding Society, American Foundrymens Association, American Society for Testing Materials, American Iron and Steel Institute, Uptown Club of New York, Newcomen Society, the Masonic Order, board of directors of Cape Cod Hospital; and he was on the executive board of the Welding Research Committee of the Engineering Foundation. He was also chairman of the Finance Committee of the town of Orleans for five years, member of the Orleans Yacht Club, and member of the Coffee Club.

"It is so hard for me to realize he is gone. He was always so strong and well and never had been in a hospital. It will be very hard to face life without him. Have you read the book, *Successful Leadership in Business* by Charles Cerami? There is a chapter about Jim, which is the most perfect picture of him you could imagine. You'd enjoy it."

In accordance with our Class Constitution, Molly, XI, our vice-president, has taken over the duties of president and has appointed a nominating committee consisting of Brad Dewey, X, chairman; John Willard, II; and Bob Keeney, III. The report of this committee will be submitted to the members of the Class by letter (or post card) ballot. (The ballots may reach you before this Review does.)

Brad shows no diminution in his activities. At this writing he is away on a trip to South America for two weeks or so. In the fall we learned that a party in honor of Brad's 70th birthday was held last summer at New London, N. H.; but on account of Brad's modesty he would not, until after much urging, tell us about it. The party was given by his wife, Marguerite, and held at his farm. Brad says that it "was perhaps the high light of my last 50 years. For your information, the birthday party was quite an event. My wife organized it and thought that with the number of invitations she sent out there might be 100 there. As the time approached, she realized her error, and we ended with a couple of tents and almost 300 guests — one from Arizona. As the chemists say, it was a two-faced reaction; and I think everybody had a good time. I am sure I did. One of the in-laws even provided a portable loud speaker for use in reading poems submitted to destroy any illusion about my past."

Only a small number attended the Midwinter Alumni Meeting. The Secretary and Muriel were obliged to be in New York attending the Winter Meeting of the American Institute of Electrical Engineers. John Davis, II, acted as secretary and reported the following as being present: John Davis; Francis Loud, VI; Joe Parker, I; Fred Perry, VI; Art Shaw, I. After the dinner all attended the talk on physics at the Kresge Auditorium. Art and Betty Shaw left on February 7 for a two months' trip to Florida, an annual event for them. John learned that Art's firm, Metcalf and Eddy, and Joe Parker's company, have contracts in the building of the new Prudential Center in Boston.

Tom Desmond, I, has already written several articles for the magazines on current social problems and he has particularly stressed the needs of retired people. We have learned that an article by him, "Planning for Retirement," appeared in the January, 1958, issue of *Today's Health*, the magazine of the American Medical Association.

Alice Desmond, a popular author of fictionalized biographies, is still adding to her reputation. We have just received from her and Tom a copy of her latest book, *Bewitching Betsy Bonaparte*, "as a token of our friendship for you which we value so highly." The book has just come so that we have not had opportunity to read it; but one can tell that it has been prepared with the same care and study as her former works. As most of you know, Alice is the author of *Martha Washington, Glamorous Dolly Madison,*

Alexander Hamilton's Wife, and *General Tom Thumb,* all rated high among fictionalized biography. The Class is proud of the accomplishments of Tom and Alice.

Several times we have reported that John Davis has become adept at painting watercolors and his paintings have been on exhibit on several occasions. This winter his painting "The Birches" has been exhibited at the well-known DeCordova Museum in Lincoln, Mass., and later transferred to the exhibition of the Cambridge Art Club of Cambridge, of which John is a member.

John reports that Ben and Barbara Pepper sailed the middle of January for a three months' trip around the world. Practically every year we are able to report a trip by Ben and Barbara to some part of the world.

Many of you may recall that in earlier notes we have reported that Sam Main, son of the late Charlie, was interested in drama and had taken parts in a number of Broadway productions. We learned with regret that he passed away in New York last September 17. Another son, Charles T., 2d, lives here in Winchester, Mass., not far from your Secretary's home; is a former selectman; and is very active in town affairs. He is an associate in the firm of Charles T. Main, Inc. Rose Main is now at Delray Beach, Fla. Alice Main, the late Charlie's sister, also lives here in Winchester and is an accomplished pianist. Muriel and your Secretary meet her quite frequently.

In the March Review we reported the death of Herb Stiebel, III, in Los Angeles on December 7. We have since received a letter from Roy H. Allen'05 of Banning, Calif., who was closely associated with him earlier and knew him well. "Herb was with me in Mexico from 1911 to 1913 when I was manager for the Sierra Plata Mining Company at Villa Escobedo. After he had been there a few months he went back to Bingham, Utah, to marry Miss Ethel Roberts, and brought her back to us. Herb was a fine fellow and a good assistant in every way. He and his wife were good company, lots of fun, and always cheerful, though things were not always pleasant for them; for that was the time when the revolution was in full swing in our district, and at times things got rather hot and trying. They stayed until conditions became such that we could no longer operate, and we all came out together. A few years later he became associated with the Travelers Insurance Company and remained with the Los Angeles office until his retirement a few years ago. I had not seen Herb and his wife for 15 years and had been looking forward to a reunion when we moved to Banning last fall, but we did not make it." — CHESTER L. DAWES, *Secretary,* Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 250 East 43d Street, New York, N. Y.; GEORGE E. WALLIS, Wenham, Mass.

1911

Hats off to Ed Sisson, I, and his wife for starting, as their contribution to this year's Alumni Fund, a fund to be known as the Sadie and Edward Sisson Scholarship Fund. It has been started with $250, and Ed writes: "I hope to continue giving $250 each year, and our Class of 1911 will receive credit for these contributions. Best wishes to you and to classmates for the year 1958 and all to follow!" That's great, Ed! Ed, you know, is president of the American Architectural Iron Company, Inc., in East Boston; and he and his wife live at 31 Gibbs Street in Brookline.

There were seven Eleveners and two guests at our class table at the M.I.T. Midwinter Dinner at Walker Memorial, February 4; and after a delicious steak dinner we all adjourned to Kresge Auditorium for the very interesting scientific education program and exhibits. Course II was in the lead with Jack Herlihy, Roy MacPherson, and Harry Lord in attendance. Harry had his son-in-law — Vernon Lindahl — with him. He has a general job machine shop of his own in Boston, with an aerial survey business as a side line. Cal Eldred and Dennie Denison were Course VI representatives, while Morris Omansky, V, and Fred Harrington, I, were also present. Fred had Charles H. Connors, Harvard'28, a civil engineer with Coffin and Richardson, Boston, as his guest. Fred looks and says he feels much better since his illness of late 1957 and is still in engineering work with Whitman and Howard, Boston. Cal Eldred told us his son, C. P. Eldred, 3d, Dartmouth'37, is now a mill manager at the Bemiston, Ala., plant of Bemis Brothers Bag Company.

Announcement was made by Northeastern University on January 31 that Dr. Carl Ell, XI, "currently serving his 48th year with N. U. and his 18th year as president, will retire from the presidency June 30, 1959. It is expected his successor will be named within the year."

Carl, who was with us in our junior and senior years, after graduating from DePauw University, taught as an instructor in Northeastern's evening school during our senior year and upon graduation with us joined N. U. full time. He became successively chairman of the Department; dean of the College of Engineering; dean of the Day Colleges; vice-president in 1925; and finally, president, July 1, 1940. In addition to a master's degree in education from Harvard, he has honorary degrees from DePauw, Tufts, Boston University, University of Rhode Island, and Emerson College. He and his wife (former Etta May Kinnear of Boston) live at 21 Beaumont Avenue, Newtonville; and they have one daughter, Mrs. Judson Scott Strong, and three grandchildren.

Editorially, the *Boston Herald* of February 7 said: "When Dr. Ell retires, he will leave behind a personal monument such as few men are privileged to do. Since he took over as chief administrative officer in mid-1940, the university has grown from a one-building school next to the Y.M.C.A. to a modern university, serving 18,000 students from one of the most up-to-date educational plants in the country. . . . He has planned and pushed, begged and cajoled, given way in one place to make headway in another. But he has never stopped building; and the pieces have somehow fallen together to make a great self-help school, where the able young person, regardless of means, could always earn an education. Boston is proud of Northeastern and its creator."

Carl has just been selected for the 1957 New England award by the Engineering Societies of New England. This 7,500-member organization honored him as part of the observance of "National Engineers Week" starting Monday, February 17. The award is presented annually to New England's outstanding engineer, as judged by engineer associates. We are proud of you, Carl!

The O. W. Stewarts continue in the news, for hot on the heels of O.W.'s being elected president of the Massachusetts Cultivated Blueberry Growers Association, his wife, Gertrude, was pictured in the *Boston Herald* of January 26 — and a fine picture it was — with this subcaption: "Appreciation Gift. — A silver tray is presented to Mrs. Gertrude W. Stewart, center, of Kingston, retiring president of the Girls Friendly Society of the Episcopal Diocese of Massachusetts, by Mrs. Herbert Judd, left, the newly elected president, and Marion Geyer, 9, of Brookline." In answer to a note of congratulation, Gertrude wrote: "In the Diocese of Massachusetts a bylaw limits the term of the officers to six years. That is a fortunate provision, else I would be ready to go on and on, for the work with the leaders and the girls has been enjoyable and satisfying. I relinquish the office with a little relief and much regret. All well here with us and elsewhere with the boys. Oz likes his McGraw-Hill work very much."

In answer to an earlier congratulatory note, O. W. wrote: "Life is really full these days. Perhaps I should know better than to assume additional responsibilities, but there is so much of interest and enjoyment underway. I confess to some likening to my part. In addition to taking the presidency of the Massachusetts Cultivated Blueberry Growers Association, I have just agreed to serve on the vestry of the Episcopal Church in Duxbury. Our best wishes to you and Sara for a long and happy residence in your new 94 Lincoln Street, Framingham, abode. Did Carl Richmond ever mention to you that he is serving as treasurer of the Winchester (Mass.) Red Cross Chapter? At least I believe he still is. Hope to get to the February 4 dinner and, by the way, I found the skiing excellent last Sunday (January 19) at the Hartwell Ski Tow in Littleton; and we have been having good skating hereabouts so far." Incidentally, your Secretary has just assumed a second year as senior warden of his boyhood church, St. Andrew's Episcopal Church, Framingham.

Another Denison note: Our younger son, George, and two other young men have recently purchased and are now operating the *Weymouth* (Mass.) *Gazette* — a 97-year-old weekly newspaper and a concurrent job print shop. The young men seem to be off to a very good start.

Got a tip from Frank Osborn, III, while in New York, that Frank Smith, III, and his wife have forsaken Connecticut, where he retired a year ago after many years of service with the American Brass Company, Waterbury, and are now living at 5310 Manauwea Street, Honolulu, T. H. On a suggestion from Osborn,

Smith wrote: "On June 11, 1957, we left New York by plane for Denver, Colo. There we got into a new Chevrolet and really got going, on through Salt Lake City; Jackson Hole; Yellowstone; Butte; Great Falls; Glacier Park with all its beautiful scenery; Columbia Falls (to see Anaconda's aluminum plant); Spokane, via Bonners Ferry, Wenatchee, and Spokane. There we stayed six weeks with our daughter, while they moved into a new home. We toured Mount Rainier on all sides and finally started south to Portland and up the Columbia River to The Dalles. From there we came south and up Hood River valley to Mount Hood, and then across country to Glacier Lake. On to Eureka (California west coast), then through the Red Woods to San Francisco. We roamed about there for four days; and then on September 11 (just three months after leaving Connecticut) we boarded an airliner for Honolulu, and arrived September 16.

"Our younger daughter and family met us and plastered us with leis. So we enjoyed the overland trip, Denver to San Francisco, 5,500 miles in 50 driving-on-road days. Then on October 20 we found a place to call our own, about five miles from the famous Waikiki Beach. It is in the Aina Haina district on level ground (which is something, here) and there must be gold under it, I'm sure, judging by the cost. So far this winter (?) the temperature has varied from a minimum of 58° in early morning to a maximum of 85° in afternoon. Mostly it is about 70° to 82° or so – no snow to shovel, the car in an open carport, *but* the grass and weeds grow like mad and keep me at work." He enclosed a picture of their most attractive house "with peaks of mountains at very left about 1,500 feet elevation, and the rocky hill in the back about 700 to 800 feet." Thanks for a fine letter, Frank, and we all wish you both a most enjoyable life of retirement in Honolulu!

Warren Simonds, I, retired December 31 after more than 37 years with Rodney Hunt Machine Company in Orange, Mass. A native of Marlboro, he and the former Marjory Curtis of that city were married in 1912, while Warren was operating a private engineering practice there. He joined Rodney Hunt in 1920 to set up the newly formed Industrial Roll Division, and since that time he has held a number of executive positions with the company. Important among his accomplishments have been the more than 15 patents which he has taken out for the company, including curve of strength on stainless steel dye kettles, stainless reels of pile-body constructions, one moving-piece suds box for washers, and a number of shaftite rolls.

In 1951, after a number of years as plant manager and having been a director of the company since 1948, Warren became assistant to the president and was responsible for patent administration, personnel, and many special assignments. He is a Kiwanian and active in civic and church affairs, having been treasurer of the Central Congregational Church. He and his wife have four children and seven grandchildren; and retirement from Rodney Hunt will give Warren and Marjory an opportunity to continue their travels, an activity they have enjoyed for many years at vacation time. In the past they have taken trips to Bermuda, Nassau, Jamaica, Mexico, Panama, and many of the states. They plan to continue residence in Orange, and to them both we wish every happiness in these years of retirement!

Fred Daniels, VI, has been re-elected a trustee for three more years and a member of the board of investment of People's Savings Bank in Worcester. In nearby Leominster, Harold Shaw, II, was recently elected president of the Leominster Home for Old Ladies. William Hennick Martin, VI, participated in the Fourth National Symposium on Reliability and Quality Control in Electronics, sponsored by the Institute of Radio Engineers, Electronic Industries Association, American Society for Quality Control, and American Institute of Electrical Engineers at the Statler in Washington, D. C., in early January. Ed Kruckemeyer, IV, sent in a check covering fund donations from himself and his partner, Charlie Strong, IV, from Cincinnati, stating how pleased they were at the fine showing the Class of 1911 made last year and stating they were "happy for you, Dennie, to see the recognition you received by being awarded the bronze beaver – an honor of which you are entirely worthy. Congratulations and our very best wishes!"

At this mid-February writing the midway report on the 1957-58 current Alumni Fund shows 1911 again leading in percentage of contributors – 38 per cent. We have 78 contributors giving $2,926.50 for an average contribution of $37.50. Let's keep up the good work and finish with a flourish! A Happy Easter to you all! – ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1912

Carl Somers' death on November 26 was noted in last month's letter. Information from his brother is as follows:

He graduated from Yale in 1906 and, after teaching for several years, entered M.I.T., graduating in Architecture with us. He was with Stone and Webster for nine years and then formed his own company, Somers and Drisko, which operated for many years. Recently he had been with Alonzo J. Harriman, architects in Auburn, Maine.

He had retired a few weeks before his death and moved to Marblehead to be near his daughter. Carl had been active in the Masonic Orders for many years. Surviving are one daughter, living in Marblehead, and a son, George D. Somers, Tarzana, Calif.

Dr. Jerome C. Hunsaker has been presented with the Distinguished Service Medal, the highest honor of the National Aeronautics Advisory Committee. You will all remember that Jerry was a pioneer in wind tunnel work and during World War I was called to Washington by the Navy as head of the Aircraft Division. He designed many Navy ships and the first seaplane to make the Atlantic crossing. A list of his awards and honorary degrees is too long to include, but briefly he has the Franklin Medal, the Presidential Medal for Merit, French Legion of Honor, Navy Cross, Wright Brothers Memorial Trophy, and Daniel Guggenheim medal. He has now been called out of retirement to help on our guided missile program.

Carl Springall is operating his own architectural business, address Box 123, Andover, Mass. He is a director of the Malden Trust Company, the Malden Cooperative Bank and Trust, and the Malden Savings Bank. His spare time is spent in fishing.

Charlie Jones is engineer and estimator with the Tredennick-Billings Company, general contractors. He lives at 52 Trowbridge Street, Cambridge, Mass. His biggest interests are his six grandchildren.

John D. Shore is now associated with Arnold Tours, one of Boston's outstanding travel agencies.

B. H. Morash has fortunately recovered from a slight heart condition which he experienced about two years ago. He is semiretired, except that he is handling the Dudley Combination lock business, a division of United-Carr Fastener Company, B. H. has built this business up over the past 20 years into a substantial and profitable business. He is still located in Canada and can be reached care of Dudley Lock Division, 93 Yorkville Avenue, Toronto 5, Ontario. – FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. C. BOLMER VAUGHAN, *Assistant Secretary*, 455 West 34th Street, New York, N. Y.

1913

Once again, we take our typewriter "in hand" and endeavor to enlighten our classmates of news or doings which have been delivered to our door by Uncle Sam. The bits of newspaper, clippings, and even letters have accumulated to a reasonable amount, so your Scribe should relay the good news and tidings to the Review Office in time for the April issue.

The DUES are still due, but it appears as time goes on, yes as "Time marches on," that our paying members are becoming more frugal. Come on, boys and girls. You cannot take it with you. Just sit down and make out a reunion year check for five honest dollars. Johnny Welch, Ed Hurst, Larry Hart, and Bill Brewster have finally taken the hint that even your class officers cannot plan a reunion without some cash or folding money. Yes, your officers, self appointed reunion committee, have huddled again at the home of good old Bill Mattson. We are all set for our 45th reunion at Oyster Harbors Club, June 13, 14, and 15, and on to Tech June 16. By the time you read these notes, you will have received a letter and an addressed envelope reminding again of the necessity of sending in the class dues and notifying the committee of your intentions in regard to the 45th reunion. – GEORGE PHILIP CAPEN, *Secretary* and *Treasurer*, 60 Everett Street, Canton, Mass.

1914

The annual dinner of Boston Technology men was held on February 5. It was a very nice dinner and an excellent pro-

gram followed. Unfortunately, other than your Secretary, the only '14 man present was Ernest Crocker. In looking around our neighboring classes, we discovered their attendance was not much better. As there were nearly 1,000 persons present, it would appear that retired men just do not go out evenings.

Speaking of retirement, Chet Ober joined this ever-increasing group on January 1. He continues his home at Darien, Conn., and welcomes his opportunity to get out for some daytime hockey, even playing with the local high school boys. Chet writes most enthusiastically that his free time also gives him an opportunity for his astronomical hobby, fishing, and searching for missing triangulation stations and bench marks.

Our Class President Charlie Fiske has spent the winter at Tucson, Ariz. He is due, about the time these notes appear, to start east again and to reopen his home at Cold Spring Farm at Bath, Maine.

One of O. C. Hall's enthusiastic letters arrived recently from Munich, Germany. He had flown over for the telephone company with which he is employed at Charlottesville, Va., in order to advise on a problem with Siemens, Halske. By the time these notes are published O. C. should be back in the U. S. A.

Many newspapers carried items on Donald Douglas' appearance before the Senate Preparedness Committee. One item was headed, "The imagination of a poet – a pioneer of the skies." Don pleaded before the committee for "more guts and less gobbledy gook."

Word has been received of the death in December of two of our classmates. Arthur B. DeWitt died in New York City on December 27 after an illness lasting several weeks. DeWitt was born in Brattleboro, Vt., and prepared for the Institute at Brattleboro High School. He was a member of Chi Phi and took part in the Tech Show. Prior to his death DeWitt operated a sheet metal business in New York. He had previously been an engineer for a ventilating contractor. He was married first to Elisabeth Brasor, who died in 1923; and second, to Ann Sanborn, who survives him. One daughter of his first marriage also survives him.

Dr. Horace G. Stewart died at Cincinnati, Ohio, on December 24. Stewart was born at Gallipolis, Ohio. After graduating from the Institute he graduated from the medical school of Johns Hopkins University. He practiced for over 30 years in Cincinnati, where he enjoyed a very high reputation. He remained a bachelor throughout his life. – H. B. RICHMOND, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass. HERMAN A. AFFEL, *Assistant Secretary*, 120 Woodland Avenue, Summit, N. J.

1915

What a Class! On January 31, 28 classmates and their guests met at the Chemists Club in New York City for another memorable class dinner. Under the guidance of Hank Marion and Larry Landers, this has become an outstanding annual affair and ranks high in our unbeatable class activities. An unfortunate last-minute sadness here prevented my going down, but George (the Pirate) Rooney did a most effective job for me. I was very sorry to miss being with our gang at this gala party. After cocktails and an enjoyable dinner, George reports an active after-dinner period of conversations and experiences. Ben Neal gave a stirring and impressive report and appeal for our 50th Fund. There are many men in the Class, prominent and active ones, too, who have not contributed nor indicated any future plans for the Fund. This must surely be oversight or procrastination; and, for Ben, I urge you all to pause a moment and consider this. Let's leave a glorious and substantial memorial to M.I.T. when we reach our 50th year out.

After the dinner, generous and hospitable Ralph Hart had a group of the fellows up to his apartment for a pleasant continuation of the festivities. They were all tremendously excited to hear the news late that night, up there, of the successful launching of our country's first satellite. Present at the dinner from the New York City area were: Bill Campbell, Hank Marion, Ray Walcott, Speed Williams, Vernon Stewart, Howard King, Jerry Coldwell, Ralph Hart, Alton Cook, Gil Peakes. From Philadelphia: Henry Daley, Dick Bailey, Larry Bailey, Ed Whiting, Sol Schneider, Fred Stetson. Long distance nominees were: Bill Spencer, Washington; Phil Alger, Schenectady; Sam Berke, Lakeville, Conn.; Larry Quirk, Middletown, Conn.; Stanley Osborn, Hartford, Conn., with his brother, Franklin Osborn'11 (very welcome); Ben Neal, Lockport, N. Y. (the winnah!); and from Boston, Bill Brackett, Larry Landers, Frank Murphy, Wally Pike, and the Pirate. How're you going to beat that for class spirit, interest, devotion, and loyalty? My thanks to you all for attending, and my deepest regrets at not being there with you. This was Vernon Stewart's first class dinner, and he said he'd never miss another one. We'll be looking for him.

John Dalton enjoyed our January 10 Boston Class Dinner so much that he wrote later from Brookneal, Va.: "Greetings from Virginia to tell you I enjoyed our class dinner. My best wishes to you all." Nice to hear from you, John. For his reservation at the Boston Class Dinner, Louie Young selected the roast stuffed squab chicken with the notation, "named Lulu." Because of a cold, Louie couldn't go, but he generously sent me his check just the same, writing, ". . . for the squab I didn't eat." What large teeth you have, Grandpapa!

Our nomadic classmates keep moving. Just read this fascinating letter from Carl and Mrs. Dunn, from India: "Harriett and I have been on an extensive tour since September 31 in France, Germany, Austria, Switzerland, and Italy, before flying directly to India. In spite of the constant traveling and sight-seeing, we have stood up to it with little fatigue, and have experienced unbelievably good luck with the weather. Although travel is supposed to be broadening, I have lost weight in the process and am feeling better therefore. From the places that we have seen so far it is obvious that 1200–1700 A.D. was a period of great building activity in the field of palaces, forts, temples – many of great size and luxury.

"The wage study in the steel industry here, in which I became involved two years ago, will be brought to a conclusion late next year, involving one or more visits, unfortunately during very hot weather. . . . On our way home we will stop briefly at Bangkok, Hong Kong, Japan, and Honolulu. . . . With formal retirement in late February, I hope to be more regular at class reunions."

As I write these on a Sunday afternoon in mid-February, an old-time Boston blizzard is raging and blowing outside. Everything is covered white; the edge of the Charles River, a scant hundred yards away, is barely visible, and the Boston shore is completely shut in. Ordinarily, we'd envy the classmates in Florida, but this year we have to be sorry for them. More and more are retiring to live down there – Harry C. Buck, 7815 Boca Ciega Drive, St. Petersburg Beach; Kendall P. Foster, 502 North 56th Avenue, Hollywood; Gabe Hilton, 1711 Cypress Street, Bellair Estates, Clearwater; John Homan, 14164 West Parsley Drive, Madeira Beach; Henry E. Rossell, 319 West New York Avenue, DeLand; George R. Urquhart, 311 Cedar Lane, Harbor Bluffs, Largo; John S. Little, 2707 Mayview Road, Raleigh, N. C. And then Jim Tobey's annual message from 312 Walton Boulevard, West Palm Beach, this year does not make us feel too bad: "If you should write how I suffer here, you would be right this time. Most atrocious weather in seven years. May have to come north to class dinner to get warm – and how. Sun shines at last today."

Honors to Ted Spear and our congratulations. Ted was recently elected to the board of directors of the National Association of Manufacturers. Ted is vice-president in charge of Public Relations for the Oxford Paper Co., Rumford, Maine, and is a member of the Pine Tree Council Executive Board of the Boy Scouts of America, the Rumford Town Finance Committee, and the Rumford Community Hospital Executive Committee; a trustee of Portland (Maine) University and of the New England Higher Educational Assistance Foundation. He also serves on the Community Relations Activities Committee of the American Paper and Pulp Association. What do you do with your spare time, Ted?

More of our men are reaching the sunset of their long, inspiring and successful business careers. On January 31 Marshall Dalton retired as president of Boston Manufacturers' Mutual Insurance Company and the Mutual Boiler and Machinery Insurance Company, both of Waltham, Mass., to become chairman of the boards. On January 15 Ercell A. Teeson retired from American Optical Company, Southbridge, Mass., where he had been general manager of the Frame Division. Ercell joined A. O. in 1925 and was a past president of the Southbridge Chamber of Commerce. He also served as local Red Cross chairman and was vice-chairman of the Worcester Red Cross Chapter during World War II. Near the end of March, Hank Marion retired from Phelps-Dodge Corporation, where he had been a top vice-president for a long time. It's hard to catch up with Hank's outside activities. To all these chaps we send our

best wishes for happiness and enjoyment in their retirement, which they all undoubtedly richly deserve for their years of devoted efforts and interests to their companies.

On January 24, Peter Masucci's wife passed away, the result of a shock from which she never regained consciousness. On February 2, Charles L. Hall, Jr., son of our Charles L. Hall, died in Boston. He graduated from M.I.T. in 1941, and had active service in World War II. He was an engineer with Jackson and Moreland in Boston and had lived in Needham. To Peter and Loring go our warm sympathies for these family bereavements.

Gale Shedd, Jr., died in Boston on December 26. He was advertising manager for Commercial Filters, Inc., Melrose, Mass., and will be well remembered, with his twin brother, Paul, for their sartorial beauty around Boylston Street days and their lead parts in our Tech Shows of that era. Ray Walcott, sponsor for the monthly 1915 lunches at the M.I.T. Club of New York, wrote me that Chauncey Durkee died in Brooklyn on February 2. He was a member of the American Society of Mechanical Engineers and the Institute of Radio Engineers. Chauncey was an outstanding man on the wrestling team in our third and fourth years. An active member of the Class, he attended every New York dinner and five-year reunions. We have written class sympathies to the families of these departed men.

It takes a lot of "help" to put together a column like this. How about it? — AZEL W. MACK, *Secretary*, Apartment 26A, 100 Memorial Drive, Cambridge 42, Mass.

1916

First of all, greetings from our youthful, ski-loving President, Ralph Fletcher: "Once again I am pleased to have the opportunity to say hello in our column. I think everyone will agree with me that we do have very interesting notes in The Review each month, and I know you join with me in expressing sincere thanks to Harold Dodge for the wonderful job he continues to do as our secretary. And, let's also give a tip of the hat to our 50th Year Class Gift Committee. With Joe Barker as chairman and Bill Barrett, Steve Brophy, Harold Dodge, and Jim Evans on the committee, they have the project well in hand and report very encouraging progress. In this brief message I would like to plug for attendance at our 42nd reunion. Notices have been sent to all members of the Class indicating briefly that our 42nd reunion will be held at the Chatham Bars Inn in Chatham, Cape Cod, Mass., on the week end of June 13, 14, and 15, 1958. Most of you know the good times that we have at these reunions. Many of us now have more free time than we had in previous years. Mark off this week end on your calendar. Make your plans now to attend. Send back your notice indicating that you will attend. For those who have never been, but now have the time, come on! Get your feet wet! It's never too late! There will be many more, but get on the band wagon now! I shall look forward to seeing many of you on the week end of June 13, 14 and 15."

We have had a fine response to requests for news and bits for the column. Ernest Gagnon writes from the quiet of Hurtsboro, Ala. — says he drove up to Gadsden, Ala., a short time before and attended a dinner of the Process Control group of Goodyear Tire and Rubber. At the conference he saw L. H. Coffin'27, Production Manager of Goodyear International, who was with him in Argentina 25 years ago. Ernest was planning a drive down into Florida — something he can do more easily than those of us in the snow belt.

In January, too, we had word from Bob Wilson, asking: "How's the water?" and pointing out that he'd be in the ranks of the retired with your Secretary and Steve Brophy soon — probably before this note reaches print. Bob, though releasing the reins of Standard Oil (Indiana), expects to continue some directorships, work for the Atomic Energy Commission, and travel a good bit. He sure is one who deserves taking it easy.

Dina Coleman says: "No new jobs. No new enterprises. No earth-shaking pronouncements." But he's setting an example that a lot of us who only talk, could well follow. He's *doing* something about the educational problem! Back in January he said that as soon as Congress got under way he expected to appear in Washington once or twice in the interest of the education system. Said: "The professionals and government bureaucrats seem to think that any ill or deficiency can be cured with more money. Down here we don't happen to think so. We already have enough money, we just are not using it efficiently. I doubt if I can make a politician believe this, but I am certainly going to try." More power to you, Dina. You're banging the spike on the top.

Flipp Fleming writes that he hopes the newcomers to the status of retirement enjoy things as much as he has — had he the opportunity to do it over he would have retired three years sooner. Last summer he and his wife took the two oldest grandchildren, who live nearby, to Niagara Falls for several days. In the fall they spent two weeks in Michigan near Traverse City for the fall coloring. Their next trip is to Hawaii, leaving home early in April, spending some time with their son in Dallas, more time with friends in Los Angeles where they lived for six years, and then sailing on April 30. They'll be gone seven weeks, will have two weeks in Hawaii and spend several days in San Francisco on the return trip.

Just after Christmas we received a note from Emory Kemp and a clipping from the *Boston Globe* with a heading, "Officials Act to Save Piece of First Railroad," and a big seven-by-seven-inch photograph with the following caption: "Old and New — Work on Southeast Expressway at right uncovered nation's oldest railroad — Quincy's Granite Railway. Standing are Thomas McSweeney (left), Hingham, and Edgar P. T. Walker." The Thomas McSweeney referenced here and shown in an overseeing attitude is none other than our Tom. We wrote Tom and got the story straight from the horse's mouth: "This is in answer to your question in regard to the old Granite Railroad. It was built in 1826 to carry stone from the so-called Bunker Hill Quarry in Quincy to the Neponset River for shipment to Charlestown, where it was used in the construction of the Bunker Hill Monument. The railroad was certainly the first in the United States, and there seems to be good reason to believe it was the first in the world. . . . About a century ago it was taken over by the Old Colony Railroad, who built their so-called West Quincy branch along the Granite Railroad right of way. . . . Some years ago I tried to get a project going to locate and preserve at least a part of the original construction, but nothing happened until a few months ago when the contractor building the new Southeast Expressway dug up and destroyed most of the remaining original construction. A young man from Quincy, who is interested in this sort of thing, noticed a piece of the railroad exposed by the Expressway construction at the foot of the hill near the quarry. He did some excellent excavation and uncovered a few feet of the old tracks. The whole matter came to a head two weeks ago when the contractor notified the excavator that it would be necessary to complete his Expressway work, and to take up the last remaining stretch of the old track. . . . We were unable to arouse any interest on the part of the local officials in Quincy, and as a last resort attempted (and fortunately attained) a large front page story in the *Boston Globe*, with the picture to which you refer. I am glad to report that this has aroused sufficient interest . . . so that we are now told that the area will be made into a park and what is left of the old roadbed will be saved." Nice going, Tom!

Earl Mellen was pushed upstairs at the end of December — from president of Weston Instruments Division of Daystrom, Inc., to chairman of a new enlarged group known as Daystrom-Weston Co., which comprises Weston Instruments Division, Daystrom's Systems Division in La Jolla, Calif., and the Daystrom-Weston Industrial Division in Poughkeepsie. When retirement comes sometime next year, he will have more opportunity, he says, to visit with his 12 (count 'em!) grandchildren. For a number of years he has been a member of the Millburn-Short Hills Planning Board and more recently has been serving as assistant chairman. The board has made a big contribution to the community in planning for improved parking facilities and proper location of residential, business, and industrial areas. Many of the large New York stores have built suburban stores in that area, including Lord and Taylor, Saks Fifth Avenue, and Altman's. Earl sometimes mentions Florida, but we think he'll not be allowed to go so far when his time comes.

Speaking of Florida, Lewis Dow writes from St. Petersburg, where he is still with the Municipal Gas Plant. He says he would have retired two years ago had it not been for the tremendous housing development and the bringing of natural gas to that area. Has a log cabin at Rock Lake about 40 miles north of St. Pete, and that's where he's going when he retires. The heavy traffic "hustle and bustle" makes things unlike the city they enjoyed 30 years ago.

Back in January a letter from Leonard Best started off: "Time marches on! From cross country to retirement with a busy life between." In November Len and Ruth moved into a new home they have built in Summit. Son Dick graduates in June in Business Administration ("All offers will be carefully considered," says Len), and is to be married late in June. Their youngest, Beverly, is a freshman at Wheaton College in Norton, Mass. He adds to our vital statistics – *present* number of grandchildren, five!! Which suggests we should perhaps give a partial summary of information we have received on numbers of grandchildren. Our record book shows: one with 21 (part responsibility); one with 17; one with 16; one with 12; two with 11; one with 9; two with 8; one with 7; six with 6; and plenty with 5, 4, 3, and so forth. These are the results for 26 cases reported; and if you feel you can help modify the basic count, please send us the dope.

We are sorry to report the death of August Schaefer on December 31 in Attleboro. Since 1947 his business activities have been somewhat slowed because of a heart condition, but his interest was never keener. He had traveled quite extensively here and in Europe. On Christmas, his whole family were all together for the first time in many years – his wife, two sons, two daughters-in-law, and two grandchildren. His son August, an architect, writes that on December 30, he and his father had a wonderful day together inspecting a model home that they had intended to market. But almost without warning the next morning his father died. An expression of sympathy has been sent to the family. And we also have received information that another member of our Class passed on, back in November – Captain George M. Steese of Course I in La Jolla, Calif. A note of sympathy has been sent to his widow by Ralph.

John Gore doesn't know where all the time has gone as he looks forward to working one more year before retirement. Has two grandchildren, and the older one seems to be taking after Gramp – good at figures (the numerical kind), expert letterer, and all that. John's principal side line has been the Boy Scout movement. He was president of their council in Canajoharie for five years and is now a member of the executive board and chairman of the Trust Committee. He's interested as much as ever in the birds and the flowers (didn't mention the bees), and has built up a substantial library of old books – nature books, biographies, and so forth. Their cottage on one of the Adirondack lakes nearby is where they've all learned to love swimming, canoeing, and "communing with nature." But vacations see them back at the shore, for John still has a bit of sea air in his bones.

The latest 1916 son on the roster at the Institute is, we believe, William J. Barrett, son of our Bill. Bill couldn't hide his pride at a New York luncheon.

We've been mentioning trips and cruises in recent issues of the column. Cy Guething is the subject matter of another one. A recent letter indicated that he was going off on an Alcoa Caribbean cruise on January 25 and then the Florida gulf coast until April 1, when the early spring flowers will be starting their appearance for him back home in Birmingham, Mich. Cy is semi-retired "for a few years on a plan that nobody could concoct but Walter Reuther. Am working a few hours, a few days, for eight months of the year – but getting very little for it. My two projects are making gears without chips and planning a method of casting die-cast cylinder blocks for the automotive industry for the 1962 and 1963 models."

Late in January Jim Evans reported seeing Dick Hunneman (at the Motor Boat Show in New York's Colosseum) who was planning to attend a meeting of the "Raven" yacht owners. Dick sails out of Marblehead – he sent along his greetings to all 1916 men. Having had a couple of recent bits about Moose Jewett via the Jim Evans news-gathering route, we wrote Moose in Buffalo for more information about himself and his'n. We had a fine reply from Moose's good wife Alexandra, who recognized our urgent plea for news as urgent and was delegated to take the necessary action. Besides being vice-president and director of Spencer Kellogg and Sons, Inc. (makers of linseed oil, etc., etc.), Moose has a raft of side activities. He is president of the board of managers of the Buffalo General Hospital, on the advisory board of Children's Hospital, an elder in Westminster Presbyterian Church, a director of Albright Gallery, and a director of the Erie County Savings Bank and of Barcols Co. Boy, do the Jewetts earn their vacations! Last year in Antigua, British West Indies, and this February in Florida for three weeks of fishing. Their oldest son is in the real estate and mortgage business; the second son (T. C. Jr., Yale), a pediatric surgeon and an assistant professor of surgery; and their daughter, Mary, married to Dr. T. C. Prentice, who practices in Buffalo. Thanks, Alexandra, for the wonderful help.

Dick Knowland writes that his annals are short and simple, as befits one who has practically retired from the marts of industry. The way he describes what he's doing and how, sounds pretty good: "Living in Goshen, Mass., my wife and I are, when not in Florida for a winter breather, situated on a hilltop, surrounded at present by heavy snows, laden pine woods, unspeakable winds, and hordes of hungry wild birds. Right now it is something of a job to keep plowed out, the snow being what it is. Business activity has become confined to one directorship and serving an occasional old-time and tolerant client. A little spice is added to living as head of the Assessors of the municipality and supervisor of a commercial farm, which is operated to reduce the taxes of the community. . . . On our place here we have mostly forest land and about 20 acres cleared, but we do raise a large garden in summer. Of the three boys, the oldest is an assistant sales manager in New York, the second is in dental practice in Williamstown, and the youngest is with Peat, Marwick, and Mitchell. No M.I.T. offspring among them. One was in the Naval Air Service in World War II, another was Army Air in the Korean 'police action.' His experiences suggest that Mr. Truman may have been in a jocular mood when he employed the euphemism. There are four grandchildren, one of them being a gal who is able to command quite a bit of family attention."

In the March issue we mentioned the new book *Flying Saucer Pilgrimage* by Austin (Bryant) Reeve and his wife Helen. – Amherst Press, Amherst, Wis. The book jacket is intriguing as it summarizes "the book that brings the flying saucers down to earth." It goes on to say: "In 1954 Bryant Reeve retired, and he and his wife drove to Mexico. Here they found saucer interest high, and with far less official and unofficial censorship. They helped uncover a Mexican chauffeur who had contacted a saucer near Valles, Mexico, and had conversed most of one night with two men from outer space."

We asked Austin how about it, and here's what he says: "Our book was written in self-defense after we had spent two years and traveled 23,000 miles in trying to ascertain for ourselves whether there was any real fire of truth behind all the 'flying saucer' smoke. . . . Believe it or not our efforts convinced us as follows: (1) that outer space is indeed inhabited, (2) that space ships are actually contacting the earth, and (3) that these phenomena transcend present-day scientific knowledge and challenge all of us to higher concepts of 'reality.'"

And now we have a pre-prepared news item from Ray Brown, up Niagara Falls way, loaded with information about several 1916-ers and ready for direct insertion in the column. Starting with the heading "Western New York Course XIV Floating Reunion (no dice)," it reads: "Five, which is about half of those now living from Course XIV, live hereabouts. We have never succeeded in all five of us getting together at the same time, but we had a near miss January 17. Eric Schabacker drove from Erie to Niagara Falls (125 miles) in a blinding snowstorm; and upon his arrival at my home, which incidentally was at scheduled time, he asked if I knew anyone crazier than he, and I didn't. Eric, Pete Mahlman, and I went to Earl Hauman's beautiful home for cocktails and were very disappointed to learn that Chet Richardson, the fifth one, was ill and just couldn't make it.

"For dinner we went to the local country club perched high on the escarpment overlooking the lower Niagara River and the bustling town of Lewiston. After dinner Pete Mahlman asked us to his apartment in the home of his married daughter. The four of us found that we had seven and one-quarter grandchildren on the average, which is a right good number. I must hasten to state that Eric (and I am not forgetting Grandma Schabacker) weighted the average; his number of g. c. is, of all things, the magic number of SIXTEEN. Pete has five and Earl and I have four each. Pete is retired and has so many things to do he probably wonders how he ever found time to go to work when he was patent attorney for the Carborundum Company. Eric has his own business, but the rest of us are Simon Legreed by industry."

As we go to press, we can report tentative plans for a class dinner at the Biltmore in New York in May, to which the ladies are to be invited. The special feature planned is Herb Mendelson's

showing of the pictures that he and Vi took on their African safari last summer. For details, watch for a notice in the mails. Jim Evans is working out the arrangements – Joe Barker, too, if he gets back in time from his trip to Europe.

The column closes again with the pleasant reminder that the 42d reunion is right around the corner – Friday, Saturday, and Sunday, June 13, 14, and 15, in Chatham, out on the end of the Cape. Good swimming, good golfing, good everything. As Ralph has said: COME! Jim Evans, taking note of your Secretary's retirement status since February 1, supplied us with a business card bearing a center caption "Retired" and provided with explanations in the corners: "No phone," "No business," "No address," "No money." This may find its use in places, even though we signed up with Rutgers University at the end of January as a professor of applied and mathematical statistics and are teaching a course in statistical quality control in the Graduate School. This, with some consulting in quality control, plus the 1916 secretary job (including learning to type), leaves not too much time for fancy loafing. Once more: to keep the old column full, write a little and write often. – HAROLD F. DODGE, *Secretary*, 96 Briarcliff Road, Mountain Lakes, N. J.

1917

Our newly elected regional vice-presidents continue to be a major factor in keeping the class notes filled with interesting news items. Surprise them by sending an unexpected letter. Their addresses are: *Pacific Northwest*, Neal E. Tourtellotte, 226 White Building, Seattle 1, Wash.; *California* and states west of the Rockies, Henry E. Strout, 736 Neuchatel Avenue, Burlingame, Calif.; *Southwest*, Richard T. Lyons, 1601 Houston Club Building, Houston, Texas; *Chicago* and midwest areas on both sides of the Mississippi River, Frank E. Peacock, 204 Lawndale Avenue, Wilmette, Ill.; *New York Area* including New York State, Connecticut, New Jersey, and Pennsylvania, Kenneth M. Lane, 232 Claremont Road, Ridgewood, N. J.; *Southeast* from Washington, D. C., Maryland, and Delaware, west to the Mississippi River, and south to the Gulf of Mexico, Thomas K. Meloy, 3000 Arlington Boulevard, Falls Church, Va.; *New England* except Connecticut, Assistant Secretary Stanley C. Dunning, 21 Washington Avenue, Cambridge 40, Mass. When you have finished reading these notes, copy the name and address of your regional vice-president before you consign The Review to the used magazine pile.

Frank Peacock has sent the following notes from classmates in the Midwestern area. Al Litchfield writes, "There is not too much to say about myself. I have two grown daughters: one graduated from the University of Michigan last June and is teaching music in the Battle Creek, Michigan, schools; and the other is a junior this year at the same University of Michigan. Yes, my hair is grey now, and there is not too much of it. I retire on August 31, 1958, so only have about eight and one-half months left to work. We plan to stay right here (Grosse Pointe, Mich.) and hope that any who pass this way will drop in." Paul M. Flagg writes: "I am retiring from all major and minor activities. My 'norm' is the speed of greased lightning, which is now reduced by arthritis to 'slow motion.' " Gerald W. Collier, who was one year at M.I.T., writes: "I retired from the lumber business in 1954. My son, Charles, is a hydraulic engineer with the Geological Survey in the Columbus, Ohio, district office. My daughter, Roberta, is a teacher in the Denver, Colo., public schools."

Robert S. Mulliken, who is Ernest DeWitt Burton Distinguished Service Professor in the Physics Department of the University of Chicago, writes: "My activities here are mainly basic research and supervision of basic research contacts in chemical physics (specifically, molecular electronic structure and spectra, both theoretical [quantum-mechanical] and experimental). I have been here since 1928. I was Science Attaché at London Embassy in 1955. I have a daughter Valerie, aged nine, and a daughter Lucia, aged 23. Lucia is visiting us just now with her husband and baby daughter and son." Frank Peacock sent the following note to the Class Secretary without any idea of its being included in the notes, but it was so spicy that it can't help but be of interest to Frank's friends: "I spent my vacation at Delray Beach, Fla., Nassau, and Havana, and there is being put a bit of pressure on me to retire right now and settle at Delray Beach. I don't feel that old right now, although after we returned the 24th of October I came down with the flu, and then the gout, with which I am cursed; so I was out nearly a month. I feel fine now, so the heck with retiring; I'm having too much fun."

Tubby Strout spent the holidays in the East: Thanksgiving with one daughter in Clinton, Iowa, and Christmas in Pawling, N. Y., with the other daughter. He spent one week in Boston but apparently did not have time to see many of his friends. He forwarded the following from Frank N. Crane of Altadena, Calif.: "I was sorry to miss the 40th reunion last June, but at the time my wife and I were on the Canadian Pacific's *Empress of Scotland* en route to Liverpool. We were in the British Isles from June 11 to September 27 and spent about eight weeks of the time on a motor tour, driving 3,500 miles in Britain and 1,000 miles in Ireland. We enjoyed the scenery and historic spots, especially Edinburgh, which we visited during the festival. The weather did not treat us so well, however, as it rained some nearly every day after July 4. I retired from my job as assistant division engineer, Bureau of Engineering, Los Angeles, last May; and now, after a six months' trip, am trying to get adjusted to a new regime."

Back again to Frank Peacock's Midwest. Louis A. Ferguson, who was with us at M.I.T. in 1913 and 1914, writes: "I am retired after 30 years with Commonwealth Edison. We live aboard our 50-foot diesel cruiser, which we sailed down the Mississippi to New Orleans and Palm Beach. We have two children: Mrs. R. M. Leach with two strapping sons; and Chip, her brother, in his fifth year as a Jesuit. After a year's layoff because of ill health, we hope to be back at sea next fall – home port Brazilian Dock, Palm Beach, Fla. A newspaper clipping from Columbus, Ohio, reports "Forty Years of Federal Service by T. L. Blakemore, supervisory engineer in the Navy Bureau of Aeronautics Representative offices here, were recognized in presentation ceremonies of a letter of commendation from the Secretary of the Navy. Captain George A. Whiteside, local Bureau of Aeronautics representative, made the presentation."

Dean Parker writes from Michigan: "Since we are all retired or nearing retirement, let's start talking about our children and grandchildren. I have one son who is a professional engineer with Eastman Kodak and an expert on film emulsion manufacture. Another son is in charge of production co-ordination with the Columbia Broadcasting System. How about a grandchildren derby? I have 10. Can anybody claim more?" J. R. Ramsey from Plainfield, Ind., wrote: "With the exception of being associated with a consulting firm for five years, I have devoted all my business life to the electric and gas utility field. Since 1950, I have been director of Industrial Relations for the Public Service Company of Indiana, with headquarters at Plainfield, Ind. We built a contemporary house in Plainfield in 1952, and have enjoyed our living here to the full. My wife and I both are ardent gardeners, and we also drive frequently to Indiana University to take advantage of the many fine cultural programs offered by that institution. For 'damnyankees' we have become loyal Midwesterners. Our son Jim's family lives in Plainfield, so we have the pleasure of being close to our three grandchildren."

Bob Marlow sent the following to Dix Proctor: "I was unable to send out any cards this year as I was laid up quite a while. I just got back to work today. I first had a mild heart attack, followed by a severe case of flu. So I had my Thanksgiving and Christmas in the hospital. I am feeling quite okay now, but am still rather weak."

The *Electronic News* reported on November 25, 1957, that General Leslie R. Groves, Jr., Vice-president of Remington Rand, Inc., was named a member of a special consulting group to the House Merchant Marine Committee. He will advise it on possible need for providing greater shipping facilities between the Atlantic and Pacific Oceans, in view of the approaching obsolescence of the Panama Canal.

En route to Wilmington, Del., on a Pennsylvania Pullman, your Secretary noticed a distinguished man with a profile and voice that stirred up 40 years of memory. Result – a pleasant ride to the Hotel Du Pont with Bill McAdams, who is doing consulting for Du Pont in addition to enjoying his emeritus professorship at M.I.T.

Have you read "Research Builds America's Future" by the president of A. D. Little – of course none other than 1917's president, Ray Stevens – in The *Atlantic Monthly* for October, 1957? It's a good article.

Here today – gone tomorrow. This is the story of two of our classmates, Dave

Pierce and Arthur Knight. When these notes were started the following was received from Dave Pierce: "My full-time contract for work with Diamond Alkali Company concludes on December 31. After that, I am to make regular visits to Cleveland for consultation, but will be able to live at our house in Elkins Park, Pa., instead of in an apartment in Cleveland with only occasional trips home, as has been the case during the past four years. Friend wife and I are looking forward to having more time for oil painting and other activities." Dave died on January 22 after an illness of one month. He had been chief engineer for Rohm and Haas and later in the same capacity for General Aniline and Film Corp. He had published a book on chemical engineering, and was a contributor to several chemical magazines.

Arthur Knight died on February 1 in Memorial Hospital, New York City. Arthur's life was filled wtih many activities, not only in business, but in civic affairs. In business, he was general manager of the Euston Lead Company, Scranton, Pa. In civic affairs he was president of the Scranton Y.M.C.A. for 10 years, and served as president of the Scranton Rotary Club and Scranton Tennis Club. He made a goodwill tour of the Middle East in 1956 at the request of the State Department. Arthur was a distinguished flyer in World War I and continued this interest as a member of the Owners and Pilots Association and the Sportsmen Pilots Association. We bid them both bon voyage.

Two brief notes about men who were with us for periods of two years each: William Warren Rausch, Course I, for designing a very modern drug store in Williamstown, Mass.; and Lewis W. Douglas, former Ambassador to Britain, for being awarded an honorary Knight Grand Cross of the Order of the British Empire, by Queen Elizabeth II.

Today's Best Smile: There was a dear old lady who sent her minister a box of assorted goodies with this note: "Dear Pastor: Knowing that you do not eat sweets, I am sending candy to your wife, and nuts to you." – W. I. McNeill, *Secretary,* 14 Hillcrest Avenue, Summit, N. J. Stanley C. Dunning, *Assistant Secretary,* 21 Washington Avenue, Cambridge 40, Mass.

1918

The power of purpose manifests itself soon in the lives of men, especially once they are out of college. In its January 7 issue the *New York Herald Tribune* carried an article titled "Man to Watch"; the man turned out to be our own Bill Foster, who will be remembered by those who were there as the principal speaker at our 35th reunion five years ago. The immediate reason for the article was Bill's being cochairman of the Gaither Committee with Bob Sprague (M.I.T. '23 and a former student of mine). Bill has divided a distinguished career between private industry and government service. The latter began in 1917 when he left the Institute to become a second lieutenant in the Air Corps. He never did finish his senior year in Electrical Engineering because he was told he had to start over again a term he had almost finished when he left. So he became a sales engineer. In short order he was employed by the Pressed and Welded Steel Products Co., of Long Island City. Because he is a superb executive Bill was soon president and a director of the company, which he made greatly successful by the early acquisition of stainless steel rights. During World War II, he worked in half a dozen wartime agencies. He did procurement work in the War Department, served as a regional director of the Small War Plants Corporation and a director of purchasing for the Army Service Forces. For his work, he received the Medal of Merit and a War Department commendation.

In 1946 he went to Washington, becoming undersecretary of Commerce in a Democratic administration despite being a Republican. His boss was W. Averell Harriman, later Governor Harriman, who was sent overseas in 1948 to set up the Marshall Plan. Bill became his general deputy at Paris. In June, 1949, he became deputy administrator of the Economic Cooperation Administration; and when Paul Hoffman left to head the Ford Foundation in 1950, Bill became administrator of the E.C.A. He was deputy secretary of Defense from 1951 to 1953. For the next two years he was president of the Manufacturing Chemists Association. He joined Olin Mathieson Chemical Corp. in July, 1955, as executive vice-president, and directed its High Energy Fuels program. Bill is a director of Detroit Edison Co., Marquardt Aircraft Co., and National Savings and Trust Co. He is board chairman of Reaction Motors, Inc., and Porter International Co. He has held a number of committee posts in the United States Chamber of Commerce. Born in Westfield, N. J., he lived in Scarsdale, N. Y., for many years. He married Beulah Robinson of Hartford, Conn., in 1925. They have one son, Seymour. Foster's name has sometimes been mistaken for that of William Z. Foster, national chairman of the Communist party; but it would be difficult to find two men more antithetical in purpose. With the E.C.A., the Defense Department, and again in the Gaither group, William Chapman Foster has been one of America's most effective anti-Communists.

Winter is a fitful time of year for those who are not hearty and vigorous. In addition to that, we are at a critical age in the life saga of the race. Professor Maurice E. Gelinas, Course VI, died on January 9 after long illness. He went up to Harvard for a master's degree in 1920, did further study at the University of Michigan, and was for 24 years a professor at Hibbing Junior College in Minnesota. For 12 years, until illness forced his retirement, he was professor of research for the Lowell Technological Institute. He is survived by his wife, daughter, and four grandchildren. Professor Waldemar S. McGuire died on January 24. Most of the time since his graduation by Course X he has been a professor of chemistry at Northeastern University in Boston. News of John A. Parker's death on November 24 has just reached me via the Alumni Office. He was another Course VI man whose final assignment, as far as I know, was as superintendent of the Southern District for the Niagara Mohawk Power Corporation, with his headquarters in Fredonia, N. Y. – F. Alexander Magoun, *Secretary,* Jaffrey Center, N. H.

1919

Word from Harold Marshall tells us that he has now retired from Warren Webster and Company, where for the last several years he had served as advertising and sales promotion manager in addition to handling the company's export sales. Harold has always been extremely active in civic affairs, we know, and he is now serving his second term as mayor of Palmyra. Or, to quote Harold: "Just now I'm busy with Palmyra Borough business – later in the year I expect to devote some of my time as a consultant in industrial advertising management." Our comment is that that is the sort of forward thinking that keeps a man from growing old.

Donald W. Kitchin (together with Orison S. Pratt, Class of '41) gave a paper entitled "Treeing in Polyethylene as a Prelude to Breakdown" at the Winter General Meeting of the American Institute of Electrical Engineers in New York during February. Don certainly does keep things humming.

The same goes for Charlie Chayne, General Motors vice-president, who spoke before the Society of Plastic Engineers recently on the subject of plastics and their use in manufacture of automobiles. Prediction is that they will play an increasingly larger part in car fabrication.

Roy Mackay writes that all goes well with him, and that he would be pleased to see any 1919 men any time they are down his way. You'll find him at the Sparrows Point Plant of Bethlehem Steel, Sparrows Point, Md., where he is superintendent of their Rod and Wire Mills.

New addresses for the following: George C. McCarten, 31010 Edgewood Road, Cleveland 24, Ohio; Alan G. Richards, 1111 Army Navy Drive, Arlington 2, Va.; Maurice H. Role, 20 Bicknell Street, Dorchester 21, Mass.

We regret to inform you of the death of Harold Kaiser, who passed away on January 28 after a long illness. He had been associated with Solvay Process for the past 37 years. Surviving are his wife, a son and two daughters. – E. R. Smoley '19, *Secretary,* The Lummus Company, 385 Madison Avenue, New York 17, N. Y.

1920

It is with a heavy heart that I must report the death of Ted Hobson. I do not need to say that Ted was one of the most popular as well as one of the most loyal members of our Class. He had been in poor health for some time and was unable to attend the last class reunion for that reason. He will be sorely missed by us all. Ted was a native of Lowell, Mass., and lived there for 40 years but moved to Columbus, Ohio, about 20 years ago. He was a star pitcher on the Lowel High School baseball team and he was a tournament caliber golfer as well. He leaves his widow, Marion; a son, Gordon; and three grandchildren. I have also just learned of the death of Harold E. Peebles

of Des Moines, Iowa, but do not have any details at this writing.

It is a pleasure to report that Morris Lipp has been elected manager of the city of Miami Beach, Fla., where he has been city engineer for many years. In receiving the unanimous vote of the City Council he was referred to as a man of integrity and competence with an excellent knowledge of the city government.

Harold Smiddy, Vice-president of Management Consultation Services of General Electric Company, was awarded the Henry Laurence Gantt Gold Medal at the 1957 annual meeting of the American Society of Mechanical Engineers. He was described at the Medal Award Ceremony as follows: "Experienced, forward-looking exponent of civic responsibility as a fundamental attitude of managers; successful in decentralizing large industry to increase its community usefulness and give managers their full responsibility; out standing teacher of management practice and philosophy; and devoted servant of his professional organizations nationally and internationally."

Captain Russell S. Hitchcock has left Melrose, Mass., and is in Sheepscott, Maine. A welcome letter from Foster Doane advises that he spent a restful and pleasant two weeks earlier this winter with our classmate Frank Badger at Hollywood Beach, Fla. He reports that Frank and his wife are both well and says that it is always a pleasure to stay at their motel, which is situated on the inland waterway and only 100 yards from the beach. I can second that motion, as I spent a very happy week there with the Badgers last winter. Foster says that before they went to Florida they did some island hopping which covered Puerto Rico, Ciudad Trujillo, Haiti, and Jamaica. Since your Secretary is just back from Jamaica, he doesn't have to be told that Foster had a good time there. Maybe we ought to have our 40th reunion down there in February instead of at Pine Orchard in June. Any suggestions?

George Morgan has gotten to be the camellia king of southeast Texas. His gardens produced the best of show entry at the recent Southeast Texas Camellia Society Show, and by this time he has undoubtedly won further honors at the 10th annual Camellia Show of the Men's Garden Club of Beaumont. A picture of George in the *Beaumont Enterprise* indicates that he is as handsome and vigorous as ever. He even outshines the camellias.

Robert T. Knapp, Professor of hydraulic engineering at California Institute of Technology, died late last year. He had been with Cal Tech for all but three of his years since graduation and was considered one of the nation's top experts in hydrodynamics. He had conducted important investigations in many fields, including turbines, centrifugal pumps, wave and surge problems of beaches and harbors, underwater ordinances, soil erosion, drainage, and irrigation. He was chairman of the Executive Committee of the American Society of Mechanical Engineers' Hydraulics Division and was awarded the A.S.M.E.'s Melville Medal in 1955 for a paper on cavitation. Cal Tech's hydraulic laboratory was conceived by Dr. Knapp and developed under his guidance. During the war he worked with the Office of Scientific Research and Development on the air and water trajectories of rockets, bombs, and torpedoes. He was also a consultant to the U. S. Army Ballistic Research Laboratory at the Aberdeen Proving Grounds. His home was in Pasadena. Mrs. Knapp survives him.

Harold Bower is living in Ipswich, Mass., address 77 Fourth Street, Little Neck. Paul Valov has moved from Oakland to Berkeley, Calif. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Ray and Helen St. Laurent phoned tonight to say they are leaving for Miami. They will drive from their Manchester, Conn., home to catch a plane for Havana; and we expect to have them stop over here in Glen Ridge en route. Maxine and your Secretary plan to leave from Idlewild next Thursday morning for a nonstop hop direct to Havana to join the St. Laurents and our kind hosts, Helier and Graciela Rodríguez, that afternoon. We're just bustin' out all over to tell you about the *nth* degree of fun and good fellowship and the very timely escape from this extra frigid weather to Cuba's balmy breezes — but we'll both have to be patient and wait until next month for the account of Technology's and our most unsual class reunion. Hope you were there to enjoy it, too!

Lark Randall and Ray both wrote glowing accounts of the 1921 cocktail party which Lark organized, with the help of Josh Crosby and Chick Kurth, to precede the annual dinner and Midwinter Meeting of the Alumni Association at Walker and the Kresge Auditorium. Says Ray: "It was an excellent get-together of the Class of 1921 last night at the Midwinter Meeting. Lark Randall and his committee did a superb job in arranging the cocktail party for the Class in the Penthouse of the Faculty Club. There were a few who did not arrive in time for cocktails and who went directly to Walker for dinner, where I am sure we had the largest representation of any Class." Lark adds: "The following 23 members of the Class of 1921 showed up for cocktails and dinner at the Midwinter Meeting of the Alumni Association on February 4. Several of the boys brought along guests, most of whom were science teachers in preparatory schools. As you know, the subject of the evening was 'A Break-Through in Science Teaching.' Sorry you were not able to be with us, but maybe I'll catch up with you at Alumni Day in June."

The composite list of attenders relayed by Ray and Lark includes Al Calvert, Josh Crosby, Ed Delany, Harry Goodman, Roy Hersum, Mel Jenney, Chick Kurth, John Mattson, Dick McKay, Don Morse, Harry Myers, Phil Nelles, Lark Randall, Herb Reinhard, Ray St. Laurent, Steve Seampos, George Schnitzler, Ted Steffian, Harold Stose, George Thomson, Bill Wald, Frank Whelan, and Everett Wilson.

Rufe Shaw has been elected to the executive committee of the M.I.T. Club of Philadelphia. Since Palmer Scott retired, we no longer get firsthand information on the activities of his Marscot boatbuilding and plastics activities, but American Boatbuilding Corporation, a combination of Marscot Plastics and Beetle Boat Companies, did exhibit at the New York Motor Boat Show. The "retiring" habit seems to be in vogue this month: witness Ed Clark departing from Warwick, R. I., to enjoy his retirement in Damariscotta, Maine; George Owens forsaking his beloved Islip, N. Y., for Vero Beach, Fla.; Colonel Bill Ready, U. S. Army, retired, moving from his Verona, Pa., abode to become a citizen of Clearwater, Fla.; and Bill Knoepke's uprooting of his Larchmont, N. Y., home to settle down permanently in Fort Lauderdale, Fla.

Of those still in harness, Ray Fisher of the Hexalpha Clan gives his address as 10215 Belgrove Court, Seattle 2, Wash. Liz Gatewood is with the American Bureau of Shipping at 45 Broad Street, New York 4, N. Y. Paul Hanson has returned to 1402 West Lake Street, Minneapolis, Minn., from his sojourn in Atlanta, Ga. James LeGrand, long-time Detroit resident, is now a neighbor of Wally Adams in Middletown, Ohio, where Jim lives at 9 Kenwood Drive. Harold C. Pickett reports moving from Beverly, Mass., to Upper Darby, Pa.; and Charles L. Pool, formerly of Boston, has a new home at 24 Sunset Terrace, Essex, Conn. Miles Zoller just says his mail should be addressed to Box 598, Cincinnati, Ohio.

Dug and Betty Jackson's attractive Yuletide greetings are graced with pictures of their eight grandchildren, ranging in age from 14-year-old Dugald 4th to the 1957 arrivals, Daniel Brian Jackson and Andrew Carlton Seabury. Jack and Marge Kendall's good wishes at the Christmas season feature their lovely new daughter-in-law. Son Bob, Stanford and M.I.T. Graduate School, met Angela on the S. S. *United States*, returning from Europe, where he had been doing research for the French Petroleum Institute; and she was on her way back from a cultural exchange visit to India under the auspices of 4-H and the Ford Foundation. They were married last September. Scott and Susan, children of older son, Jack, look mighty comfortable on the hearth at Hermosa Place; but the log fire is probably just a photographic prop they use out there in South Pasadena, Calif. Bob and Helen Miller's Christmas group picture of their six good-looking children includes Peggy's husband, Jim Weaver.

Please excuse us if the column of notes has noticeably shrunk this month. Have to get ready for meeting the other '21-ers in Havana and the swell group from the M.I.T. Club of Cuba who will be our pilots throughout the five days for which events are programmed. If we didn't see you there, come on over to Cambridge with your wife next Alumni Day, June 16, and we'll try to arrange a special pictorial showing of the 1921 Parade in Cuba. Meanwhile, let's have your news to help get the column back to its usual proportions. Many thanks! — CAROLE A. CLARKE, *Secretary*, Components Division, International Telephone and Telegraph Corporation, 100 Kingsland Road, Clifton, N. J. EDWIN T. STEFFIAN, *Assistant Secretary* and *Chairman, Havana Reunion Committee*, 11 Beacon Street, Boston 8, Mass.

1922

Trial by Fire is the name I must give to the present Buffalo activity. We are on trial with Joe Conrad and Chick Kane as judges for good results in the Alumni Fund Campaign. Checks will be fired in as we put a big fire under the Alumni, including the '22 men. As this Fire Sale starts on either tepee warmers or exotic fuels, the order is "Fire when ready," and especially fire away to encourage increased gifts. In the snowstorm and low temperatures we are now having, fire is a welcome word.

Oscar Horovitz of Newton, Associate, Photographic Society of America, and Fellow, American Cinema League, has been awarded honorable mention in the 1957 International Cinema Competition of the Photographic Society of America for his film, *The Social Beaver*. We have always enjoyed Oscar's remarkable talent at our reunions. Clate Grover has sent in a clipping from the *New York Herald Tribune* with a photograph and the announcement regarding L. F. Hickernell, Vice-president in charge of engineering of Anaconda Wire and Cable Co., telling of his nomination to be president of the American Institute of Electrical Engineers. He will come to Buffalo in June to receive the gavel. He is the author of numerous technical papers and articles, the editor or associate editor on several technical books, and holds patents on magnetic mine sweeping and high voltage cables.

There was a good review of Ted Miller's Polymer Chemicals Co. and W. R. Grace and Co. in *Business Week* of January 25 regarding starting production of low-pressure, high-density polyethylene in his $18 million plant. We hope Ted can get back from the Mardi gras country often. There was a good photo in the January issue of the Technology Review of George Dandrow accepting the Silver Stein Award. Also Ted and Mrs. Miller, Mrs. Fay Lincoln, and Parke Appel. Make special note of Parke's form-fitting cummerbund. G. Everett Farmer gave the introduction to a session on Microwave Channel Requirements for Protective Relaying at the winter meeting of the American Institute of Electrical Engineers. Another nice write-up has been received on the good job Clinton B. F. Brill has been doing for New York state with best wishes for his new job as chairman of the New York State Thruway Commission.

Changes of address received include the following new locations: William W. Bainbridge, 4 Manning Circle, Pelham, N. Y.; Thomas D. Tyne, 10 Sailers Way, Rumson, N. J.; H. Clifford Gayley, 1105 Park Avenue, New York 28, N. Y.; Seymour H. Hemenway, 8 Revonah Avenue, Stamford, Conn.; Colonel Robert S. Barr, 3002-8th Avenue, Pueblo, Colo.; Eben H. Baker, 99 Pine Ridge Road, Waban 68, Mass.; Ralph C. Geckler, 19333 Van Aken Boulevard, Shaker Heights 21, Ohio; Alan W. Hastings, 3610 Long Avenue, Beaumont, Texas; Professor Charles W. Ufford, 730 Panmure Road, Haverford, Pa.; John H. Wishman, 5601 West 78th Street, Prairie Village 15, Kansas; Brigadier General William F. Heavey, 4000 Massachusetts Avenue, Northwest, Washington 16, D. C.; H. Ward Doebler, 418 Glen Road, Weston 93, Mass. We send sympathy to the families of our classmates who have passed on, including Russell G. Bellezza of New York who was recently named assistant administrator of Business and Defense Services Administration of the United States Department of Commerce. He had previously been with General Electric and the General Cable Corporation. — WHITWORTH FERGUSON, *Secretary*, 333 Ellicott Street, Buffalo 3, N. Y. C. GEORGE DANDROW, *Assistant Secretary*, Johns-Manville Corporation, 22 East 40th Street, New York 16, N. Y.

1923

Our 35th reunion starts at The Pines, Cotuit (Cape Cod), Mass., June 12; and we wind up in Cambridge for Alumni Day, June 16. Penn Howland and his energetic committee have plans well under control, and we will be looking for you on those days.

Somehow or other it escaped our attention that Robert Sprague, XIII, Chairman and Treasurer of the Sprague Electric Company and Chairman of the Federal Reserve Bank at Boston, was director of the 100-man committee that produced the Gaither Report on Defense for President Eisenhower's National Security Council. He and President Killian have worked together in the past as consultants to the National Security Council and the Science Advisory Committee of the Office of Defense Mobilization. Bob says the public needs more facts, which seems to be a rather conservative estimate of the situation. Congratulations!

As you know, Julius A. Stratton, VI, is acting president of the Institute while President Killian is on leave of absence as technical advisor to President Eisenhower.

Bernard E. Proctor, VII, Head of the Department of Food Technology, in cooperation with S. A. Goldblith'40 is coauthor of an article in Symposium Volume Number 49 of American Association for the Advancement of Science. The title is "Present-day Status of Radiation Sterilization." Our local grapevine informs your Scribe that the food processing companies are greatly interested in the new developments.

Bertram E. Warren, VIII, and Otto J. Guentert'56G are coauthors of an article entitled "X-Ray Study of Faults in Body-Centered Cubic Metals," in the January, 1958, issue of *Journal of Applied Physics*.

Gerald A. Fitzgerald, VII, has been named professor of agricultural engineering at the University of Massachusetts. His main area of responsibility will be in marketing education work with retail firms. He is well qualified for the new position, having had an outstanding career with the U. S. Bureau of Fisheries and as a research engineer for General Foods Corp. He is a consultant for several large food processors and food users.

E. Louis Greenblatt, II, was honored in January for 25 years of devoted service as treasurer of the Moses Michael Hayes Masonic Lodge in Boston. He is also past master of the Germania Lodge, A. F. and A. M., and has been extremely active over the past 30 years in Masonic circles in Greater Boston.

Newspapers in January related that a Peiping radio broadcast announced the dismissal of five leading officials in the Hunan Province of south-central China. Among them was our classmate, Cheng Hsin-ling, Vice-governor, who was charged with anti-Communist and anti-Socialist crimes for allegedly having used the short free criticism period of last year's rectification movement to launch attacks on the Chinese Communist Party.

Ernesto B. Ledesma, II, general commercial superintendent of the Philippine Long Distance Telephone Co., wants one of his sons to learn something about the mutual fire insurance business; so we have offered to take Junior on here at White Plains, while another son is studying electronics at the Radio Corporation of America Institute in New York City. Arrival is expected in April. After completing their studies, the two boys will return to the Philippines to go into business there. Ernest sends his regards to the Class and states there may be a chance he will make the reunion.

We regret to report the passing of Benjamin Albert, VI, who was head of the Electrical and Technical Division of Boston Edison Co., with which he had been associated since graduation. He was a member of the Temple Ohabei Shalom, Brookline; Mass.; the American Society of Professional Engineers; the American Institute of Electrical Engineers; and the Richard C. MacLaurin Lodge, A. F. and A. M.

Remember, THE 35TH REUNION STARTS JUNE 12! It is time to start polishing your stories about fishing, grandchildren, accomplishments, and favorite anecdotes. The competition at Cotuit will be intense — some of us would rather talk than perform. — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 North Broadway, White Plains, N. Y. WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington Street, Auburndale 66, Mass.

1924

No doubt by now the daffodils are blooming and the returning birds are twittering in the tree tops, but as this is being written Cambridge is still digging out after the worst snowstorm in many years. For the second time in history M.I.T. was listed on all the early morning "No School" broadcasts. And so, against this background of present confusion and future hope, a Happy Easter to all of you!

A few announcements of some importance. The Phelps Dodge Copper Products Corporation showed rare acumen in electing as its new executive vice-president, Edgar P. Dunlaevy. Ed has also been made a director of the corporation. New York's large Puerto Rican population is well known. Not so well publicized is the fact that Chicago also has quite a delegation. Early this year their largest organization, the Caballeros de San Juan, named its entry as "Puerto Rican of the Year." He was, of course, Luis A. Ferré, "prominent industrialist and political figure, head of Ferré Enterprises and vice-president of the Republican Party in Puerto Rico." Luis was feted at a big

banquet at the Conrad Hilton, later spoke to the City Club on "The Puerto Rican Challenge."

Lloyd Gensel has been in public administration work since the early 'thirties, a large part of that time in Atlanta, Ga. In January he took office as executive assistant to the chairman of the DeKalb Commission. An alert secretary should be able to go on from there, but unfortunately expansion on this item must await word from someone a bit closer to the scene. This winter the University of Michigan dedicated a new Aeronautical and Automotive Engineering Laboratory. A high spot in the festivities, award of an honorary Doctor of Engineering degree to James H. Doolittle.

A fragment of a *New York Times* piece arrived recently, presumably part of a talk given by William H. Correale, New York's superintendent of School Building Design and Construction. From what was included we gather that Bill's payroll is about $2.5 million a year and that since 1951 70 different architectural firms have been used, and a remarkable face-lifting has resulted.

Franklin O. Billings, the movingest man in the Class, has done it again. Now that he's through school in Washington he's gone south to Ventura, Calif. If he's going to work on the problems of the aged, there is probably a greater concentration of source material down there. Back in New York, the New York Club is making a professional committee man of Sox Kinsey. He's on the club's nominating committee for 1958; and also, a more far-sighted job, on its long-range planning committee.

"Nutley, N. J. — Paul J. Cardinal, who has been vice-president of the Vitamin Division of Hoffman-LaRoche, Inc., for the past 10 years, has been promoted to vice-president in charge of industrial relations." Evidently, having glutted the vitamin market, Paul has been moved on to bigger and better things. Asked for a definition, Paul says of industrial relations: "Our concept of the term means both the health, welfare, and morale of our 2,560 employees . . . and also relations with industry across the horizon, with community life and what have you." That covers a lot of territory, especially the "what have you"!

Paul reports that the February New York luncheon had several cancellations, blames it on Lincoln's Birthday. By what chain of reasoning is not quite clear. But these '24 luncheons at the New York M.I.T. Club (Wednesday of the second full week of each month, 12:15 P.M.) are taking hold. To date the following have been at one or more: Al Anderson; Walter Bagby; Gordon Billard; Roland Black; Phil Blanchard; Howell Brown; Paul Cardinal; Austin Cooley; Bill Correale, Griff Crafts; Bill Delehanty; Jim Grahame; Walt Gress; Bill Keplinger; Sox Kinsey; Elko Honigman; Dick Lassiter; Pret Littlefield; Bill MacCallum; Jack McCoy; Frank Manley; Perry Maynard; Dan Mead; Lou Porter; Gus Rudd; the Schoolers, pere et fils; Pret Scott; Greg Shea; Howard Stevens; Henry Tanck; and Ed Wininger. This column is getting to look like a sounding board for our New York contingent, but it's a good group; so join them when the opportunity arises.

Might not be amiss to remind you that our 35th reunion draws closer all the time. We'll foregather at the Oyster Harbors Club on Cape Cod from Friday, June 12 through Sunday, June 14, in 1959 — with, we hope, a goodly accompaniment of wives. There will be a few '07 men on deck at the same time, but maybe that will just make us feel younger. Plan your next year's vacation accordingly. — HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

1925

It is with deep regret that we announce the passing of three members of the Class during the past few weeks. On January 9, Colonel Arthur R. MacLean, Course I, U. S. Army Retired, died of cancer at the Walter Reed Army Hospital at the age of 54. Colonel MacLean served as a specialist in material procurement with the Chief of Engineers Office during World War II, following his call to active duty in 1940. He had remained in the Service after the close of the war and had had a number of assignments, including one from 1952 to 1955 as a member of the staff and faculty at the Engineers' School, Fort Belvoir. He also served as post engineer at Belvoir. He was in Paris with the Supreme Headquarters Allied Powers Europe (S.H.A.P.E.) in 1956 when a physical examination showed he had cancer, at which time he retired and moved to Falls Church, Va. He is survived by his wife at 510 Juniper Lane, Ravenwood, Falls Church.

On January 10, William J. Limpery, Course VI, died at the Elmhurst, Long Island, General Hospital following a long illness. He had been a civil engineer for the city of New York for more than 32 years, having joined the New York Department of Public Works shortly after leaving M.I.T. He was active in the planning of the city's hospitals and public buildings, and also helped in the planning of the 8th Avenue Independent Subway line. He is survived by his mother, Mrs. Maria Limpery.

In January, also, Nelson (Jocko) D. Malone, Course II, corporate insurance manager of the Revere Copper and Brass Company, Inc., died at his home, 211 West Sycamore Street, Rome, N. Y. Jocko had been seriously ill for many months.

All the news this month is not on the sobering side. The Kerite Company in New York City announced on January 22 that Ralph B. Norton, Course XIV, had been promoted to the position of chief engineer. This company has been manufacturing insulated cable and wire for the railroads and the power and industrial fields for 100 years. Ralph joined the company in 1926; and from 1945 until his recent promotion was their assistant chief engineer.

Theodore Franks, Course XV, President of T. W. Franks and Associates, a management consultant firm in Chicago, Ill., was one of the main speakers at the annual meeting of the American Society of Group Psychotherapy and Psychodrama in New York City.

A final note from the *Gloucester, Mass., Times* indicates that the Gloucester School Committee at its organization meeting selected Edward A. Hagstrom, Course II, to fill an unexpired term; and he will serve for the next two years. He is well known as a civic minded individual and a native of Gloucester, and is in the general contracting business with his brother, their specialty being large machine contracting and hot topping. — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

This morning your Secretary will reap the benefit of having sent a post card to a classmate we have not heard from for years. Bill Kalker came back with a nice letter that will get us off to a good start. Before we turn you over to Bill, however, we must mention that the notes *are* being written at Pigeon Cove as usual and that it is a really cold February morning. You may sometimes wonder what we do about the little house on the cliff during the week in cold weather, this being our 10th winter. Well, at first I used a flashing searchlight connected to a thermostat that would flash at the neighbors if the temperature dropped to 40°. Then we found that the plants required watering, so we turned the responsibility of watching the heating plant over to Gunner and took the flashing searchlight to Winchester to guard the house there week ends. What I am leading up to is that it finally happened. Gunner entered the house this week and found the thermometer at 38°. He got into action quickly though; the oil burner man replaced a dead motor, and we were back in business before any damage resulted. It took 10 years, but if we had not anticipated trouble we would have really had it. Now let's get on with Bill's letter — here goes:

"Dear George — When your card was received, my wife embarrassed me into promising to write to you. Her interest could have been generated because your card was postmarked "Rockport." You see, my wife spent several summers studying art and painting in and around Rockport and Gloucester before we were married, and she sort of still has a soft spot for the area. At any rate, I have been cajoled into writing, so here goes. My career has been rather ordinary. Following graduation, I went into the mortgage financing business; and after a few years at that and the depression, I drifted into the construction of housing. After erecting a number of large housing projects, I got the bright idea that rents were at their peak and sold out all of our holdings in the apartment house projects that we had built. I then went into the more conservative field of erecting office buildings, which I rented to prime tenants. Apparently I didn't take full advantage of my training in economics at the Institute because I guessed wrong, apartment rentals having gone up substantially since then, as most people know. However, I have enjoyed my past few years of this type of building, having erected projects all over the country from Hartford to Texas, the last one of importance being in Chicago. Right now, I am erecting the first new tall office building that has been built in Brooklyn in 30 years and have leased it in

its entirety to the Fidelity and Casualty Company of New York for a long period.

"In between, I managed to marry, and I now have a son at the University of Michigan and a daughter at the Scarsdale High School. We manage to squeeze in a few trips to Europe now and then, and we just returned from a European trip during the Christmas and New Year's holidays with our children. Oh yes, we still get up to Gloucester and Rockport. We enjoy suburban life in Scarsdale and I maintain my office in nearby White Plains. I met Sam Cole some years ago and he was with one of the governmental agencies. Other than that meeting and a telephone conversation with one of the Kelly brothers, I have not crossed paths with any other '26-ers all these years.

"I had an interesting experience a few years ago that relates to the Institute. While negotiating a large lease, the chairman of the board of the Continental Insurance Company of New York, my tenant, asked me how and why I was able to come up with the proper solution to all their problems in a matter of weeks whereas they had been negotiating with others for many months, unsuccessfully. He asked about my background and my professional training and education. As soon as I mentioned that I had graduated from the Institute, he said: "I've heard enough, that explains everything, the deal is yours." I guess this proves that M.I.T. still has a magic effect on a good many people, probably more so now than ever before, even though we have been out of school for all these years. My best personal regards, and here's to the future. Sincerely – Bill" No, we did not reprimand Bill for not dropping in at Pigeon Cove because after all he wrote a nice letter. However, we did extend the usual invitation for his next visit to Cape Ann.

Now we have an interesting news release about another classmate. "Cyril S. Smith, professor of metallurgy, recently resigned as director of the Institute for the Study of Metals of the University of Chicago. Mr. Smith, who headed the Institute since it was formed in 1945, will devote full time to basic research in the physical structure of metal alloys. He worked at the Los Alamos Scientific Laboratory of the Manhattan District during World War II, and for three years was in charge of metallurgical investigations."

Here's one that I'm trying to recall – I find a sheet torn from my calendar pad in late October and tossed in with my notes. It says, "Walter Campbell is doing the architecture on the new American Embassy in Taipei with Herb Beckwith." As I write, it seems to come back. Win Potter'22 phoned one day last fall – he was in Boston on a visit from Formosa, and I am pretty sure he gave me this message. Win, incidentally, was returning to Formosa for another term with his engineering firm. Classmate John Kimberly was recently honored with a large testimonial dinner at the Hotel Pierre in New York City. Class Agent Chenery Salmon sent me the announcement, and I had hoped to attend; but last minute business plans made it impossible. We will quote the announcement. "American Newcomen, at New York, N. Y., does honor to an internationally known leader in the pulp and paper industry, on occasion of its 85th anniversary (1872-1957). We honor an important corporate milestone of: Kimberly-Clark Corporation and its president and chairman of the board, John R. Kimberly of Neenah, Wis., U. S. A." We understand it was a most impressive event and regret having missed it.

A card from Albert C. Warner gives his new address as Route #3, Box 46A, Santa Fe, N. M. Al reports that he has moved Warner Development Co. to Santa Fe. They make a new type of single-pointed threading tool for lathes. Also, his father, Mr. A. P. Warner, inventor of the magnetic speedometer, passed away last year. It was nice to hear from Al – Santa Fe sounds like a nice place for a research laboratory. Another card, from Jerry Doolittle, tells us that he is still with Holliday-Hathaway Co. as office manager in Great Neck, Long Island. "Also, our boy, 21 years, is a budding actor – however, still budding. That is a tough racket. Couldn't sell him on engineering. He takes after his mom, who is a musician. We have a fine summer place at Westhampton Beach, Long Island, with boat on the bay. If anyone gets down that way, we would welcome them. Jerry."

Well, this about does it, and for next month our plans are still pointing toward the fiesta of the M.I.T. Club of Mexico at the time our next class notes are due. Therefore, you may get very short notes for May; but they may make you envious – unless you are there, too. We recently talked with Lou Darmstadt over the phone, and he is thinking of attending. He was there last year and had such an enjoyable time the temptation to return is very great. – GEORGE WARREN SMITH, *General Secretary*, c/o E. I. du Pont de Nemours and Co., Inc., Room 325, 140 Federal Street, Boston, Mass.

1927

Through the years we have recorded Henry Johnston's progress with Strathmore Paper Co. of West Springfield, Mass. Most recently he has been named vice-president and assistant to the president. He joined Strathmore on graduation.

Last July we recorded the election of S. S. Auchincloss as president and chairman of the board of Tracerlab, Inc., of Waltham. He was quoted recently in a news release which I think you will find of interest because of its general applicability to other businesses: "In the past we have worked very hard to increase our sales to the civilian market so that our government business would not become the dominant factor. In the foreseeable future, however, with the increases in government expenditures in both civilian and military fields, a greater percentage of government business should not be the potential impediment it may have been several years ago. In addition, Tracerlab is in a rather unique position because it is one of the handful of companies in the world capable of doing large-scale manufacturing and applied research in the nuclear field. It is unlikely, therefore, that, as with much other government business, any of our research, manufacturing, or development work would be shifted around from one firm to another, as could ordinarily manufacturing work.

"I believe that the nuclear industry, particularly applied radiation, faces a tremendous increase as the demand for its services and techniques grows under the pressure to keep the United States in the world scientific lead."

A very complete story on Sidney Waugh's career is contained in an article by Ellen Northrup in the January issue of the *Bucks County Traveler* (Doylestown, Pa.). Here is the lead paragraph: "Rarely in the field of the arts does a man appear whose work embodies both complete artistic integrity and almost instantaneous public acceptance. Such a man is sculptor and industrial designer Sidney Waugh, part-time Bucks County resident, full-time citizen of the world." The article concludes by quoting Robert Frost when he was presented the gold medal of the American Institute of Arts and Letters – designed by Sidney Waugh. At the presentation, he mused: "All my life I've tried to influence talented young people to enter the arts. When I saw the evident gifts of Sidney Waugh, I had the highest hope and expectation that he would become a poet. But here's my poet slipped through my fingers and become a sculptor!"

Our Class President, Jim Lyles, in the last year or two had been greatly occupied by the marriages of his two daughters. Each daughter has now presented him with a grandson. – J. S. HARRIS, *Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N. Y.

1928

As these notes are being written, it is the middle of February and a blizzard has just buried this part of the country in a 20-inch snowfall. Nevertheless, registration cards for the June 13 to 16 reunion at the Marshall House, York Harbor, Maine, continue to come in, many of them with messages and bits of news from classmates everywhere.

Ahmed Sharabati, Course II, sent in his reservation card from Damascus, Syria, stating that he would attend with his son and daughter. He wrote: "I am a contractor in the Middle East, working in Iraq, Saudi Arabia, Kuwait, and Syria. My son, Issam, and my daughter, Aida, are in Boston preparing to join M.I.T. in 1958-59. I visited M.I.T. in September last (after 29 years), and hope to visit again in June."

Another who expects to make it from Europe, although he is a resident of New Rochelle, N. Y., is Lazare Gelin. Lazare, who expects to come with his wife, says: "I resigned as president of Lear International in 1956 and established myself as an independent consultant, hoping to be able to take it a little easier. I became a grandfather and expected to stay longer at home. However, it turned out that I have to travel even more. I am on my way to Europe but hope to return just in time for the reunion."

We are sorry to learn that John Houpis had a slight heart attack a few months ago. He wants to joint the party in June and will come with his wife and son if he can make it.

Still another from a long way off: Har-

old T. Blackwood is coming from Paris, France. His note reads: "After spending more than 20 years in Mexico, I came to Paris more than four years ago to represent U. S. Steel Corporation in a mining venture they are undertaking, in association with French interests, in Equatorial Africa."

Tom Larson, who has been to all previous reunions, sent his regrets: ". . . I have a business trip to West Germany in May and Lillian is going with me – we may not be back in time for June 13 to 16. Son, Robert, is now at M.I.T. Graduate School of Industrial Management. He graduated from Wesleyan University in June, 1957. Linda is a freshman at Lasell Junior College in Auburndale, Mass. . . ." Tom is the Class's best golfer, and we hope he will be back in time to participate in the golf and putting tournaments at York Harbor! In any case, a pleasant trip to you both, Tom and Lillian!

Carl Feldman and his wife will be with us. Carl's message states that he is with Allis-Chalmers Manufacturing Co. Also he is doing some work for National Engineers' Week in Boston and serving as assistant chairman of the Joint Committee for National Engineers' Week.

Several '28 men have been the subject of recent news items coming to our attention. A news release of the Texas Company relating to Leon P. Gaucher, Course I, states: "Leon P. Gaucher'28, assistant to the manager of Research and Development at the Texaco Research Center, Beacon, N. Y., and DuBois Eastman, director of Research at Texaco's Montebello, Calif., laboratory, are copatentees of a recently issued patent, U. S. 2,789,094, assigned to the Texas Company and directed to the manufacture of synthesis gas, a process which is now being used throughout the world for the manufacture of ammonia and fertilizers. Mr. Gaucher joined Texaco in 1929, after being awarded an S.B. degree in Civil Engineering at the Massachusetts Institute of Technology in 1928. He is a member of the American Nuclear Society, Association for Applied Solar Energy, the Research Society of America, and the American Institute of Chemical Engineers. He joined the Texas Company as an engineer at the Company's plant in Port Arthur, Texas; and he has held a succession of assignments in engineering design and research there, in New York City, and at the Texaco Research Center. Mr. Gaucher is the author of several technical papers presented before professional societies. He has also been awarded 19 other patents."

In the financial pages on January 29 there appeared a very fine portrait photograph of Bill Kirk with the information that "Shareholders Trust of Boston has named William J. Kirk to the Board of Trustees. He is executive vice-president of John P. Chase, Inc." Bill's son, George, is a second-year mechanical engineering student at the Institute. Our congratulations, Bill, on all counts!

The *Boston Traveler* for November 18, 1957, carried the story of Union Bay State Chemical Co. and the prominent part played by Roland Earle. According to the article, "The key 'idea man' in all this was and is Roland D. Earle, M.I.T.'28, director of new products and president of Union Bay State Laboratories, Inc., a subsidiary." For many years Roland was president of the parent company; but he preferred development work to purely managerial duties.

Gentlemen, if you have not yet sent in your reservations for the June 13 to 16 week end, please do not delay. Fortunately, the Marshall House is a large hotel and there will be room accommodations even for you latecomers. – GEORGE I. CHATFIELD, *Secretary,* 100 East 42nd Street, New York 17, N. Y. WALTER J. SMITH, *Assistant Secretary,* 15 Acorn Park, Cambridge, Mass.

1929

A press release on Gerry O'Connor says he has been elected vice-president of Raymond Concrete Pile Company. From the release it appears that Gerry is in Central America, where he opened the Caracas office in 1936 and has been chief executive officer for a number of the company's Venezuelan subsidiaries. He also supervised the Creole Petroleum Co. offshore storage and loading station in Lake Maracaibo.

We also have a report that Hazen House delivered a paper entitled "Current-Carrying Capacity of A.C.S.R." before the winter meeting of the American Institute of Electrical Engineers, New York.

We also had a note on Hubert Whiting, who was recently appointed operating manager of the New England Division of Socony Mobil Oil Company, Boston. He has previously been connected with the New York and Philadelphia divisions. He now lives in Wakefield.

Through oversight your Secretary omitted another member of the Alumni Council from the February notes. He is Bill Baumrucker, club representative assigned to Lima, Peru. Sorry for the oversight, Bill.

We are having a hard time getting organized for any volume of notes; so again I urge, drop me a note. – FISHER HILLS, *Assistant Secretary,* Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1931

News of Bert MacLeod's untimely death came as a terrible shock to all of us who knew him. Details of the accident are given in the following excerpt from a clipping sent us by Dick Baltzer: "Tragedy struck the family of former Pembroke residents on January 20 when Bertram H. MacLeod, 49, of Wacouta Beach, Red Wing, Minn., was killed in an automobile accident and his wife Doris was seriously injured. She is still in the hospital on the danger list. A son, John, 15, was also injured. The accident occurred in a head-on crash when the MacLeod family were returning from church; the icy highway is blamed for the tragedy, which caused serious injury also to the occupants of the other car involved.

"Although several years have elapsed since the family left Pembroke about 1941, they had made many friends while making their home at Goose Hill Lane, off Taylor Street in East Pembroke. Their son, Richard, who is married and in the Air Force, attended Pembroke schools. Another son, Robert, 19, is a freshman at Purdue University; and a son, John, a freshman at the Red Wing High School. MacLeod joined the Avon Sole Co. in 1935. Associated primarily with the sales department, he also contributed technical inventions on which he held patents. He rejoined Avon Sole Co. last fall after a 10-year absence, during which he served as vice-president and sales manager of the Gro-Cord Rubber Co. and general manager of the Rubber Sole Division of Durkee-Atwood Co."

While in Chicago recently, I spent a very pleasant evening with Ed Blake, his wife Harriet, and their daughter Mary. They live in Hinsdale, Ill., and enjoy it, although I suspect they become nostalgic for good old New England at times. Ed is vice-president in charge of sales for American Name Plate and Manufacturing Co., 4254 West Arthington Street, Chicago.

Belatedly, we learned that Rear Admiral Truman J. Hedding, U. S. Navy, began his official duties on October 14, 1957, as Bureau of Aeronautics general representative, Western District (B.A.G.R.), after brief assumption of command ceremonies at headquarters in El Segundo. As B.A.G.R., Admiral Hedding will direct research, development, and production of Navy aircraft and missiles in the eight western states and Hawaii. He comes to this command after a year as commander of Carrier Division Three in the Pacific.

During World War II, Hedding served as executive officer aboard the aircraft carrier *Essex;* in August, 1943, became chief of staff to the commander, Carrier Division Three; and served as chief of staff to Admiral Marc Mitcher. For outstanding service during this period, he was awarded the Legion of Merit and a letter of commendation, both with Combat V's.

During the Korean conflict, Hedding was assigned as chief of the Joint Staff of Commander-in-Chief, Pacific Fleet, and at the close of hostilities became a commander of the Formosa Patrol Force. He then served as director of Strategic Plans for Joint Chiefs of Staff, Admiral A. W. Radford.

Ed Hubbard has recently been made an assistant vice-president of Coffin and Burr, Inc., of Boston; and Howard Richardson, Class Prexy, is now senior vice-president of Sylvania Electric Products, Inc., in the Electronic Systems and Special Tubes Division.

Among those who participated in the Winter General Meeting of the American Institute of Electrical Engineers at the Hotel Sheraton-McAlpin, New York, February 2 to 7, 1958, were the following classmates: George T. Bevan, who gave a paper entitled "Some Aspects of the Application of Diesel-Electric Locomotives in North and South America"; Frederick W. Suhr, who re-presented for a discussion a paper entitled "A Theory for Shaded Pole Motors"; and Robert T. Weil, Jr., who was vice-chairman of the planning committee.

Word from the Institute of Radio En-

gineers tells of Don Sinclair's appointment as a director. Don is vice-president of engineering for General Radio Corporation, Cambridge, Mass.

The following changes in address have been received: Walter C. Bodycomb, Jr., E. I. du Pont de Nemours and Co., Carl Junction, Mo.; Patrick J. D. Harney, 820 Massachusetts Avenue, Cambridge 39, Mass.; Robert J. McMinn, Edgewood Court, Parsippany, N. J.; Winthrop D. Hodges, General Delivery, West Palm Beach, Fla.; William A. Pitbladdo, 100 Brooks Road, Pittsford, N. Y.; Edgar W. Sniffen, Room 1765, 38 South Dearborn Street, Chicago 3, Ill.; John E. Spalding, P. O. Box 175, Linden, Ala.; Winthrop W. Spencer, 19 Coolidge Avenue, White Plains, N. Y.; Charles E. Starr, Jr., Esso Research and Engineering Co., P. O. Box 51, Linden, N. J. — EDWIN S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn. GORDON A. SPEEDIE, *Assistant Secretary*, 90 Falmouth Road, Arlington 74, Mass.

1932

Two of our classmates have taken assignments with the Educational Council as good will ambassadors from M.I.T. to the high schools and preparatory schools of their areas. Al Mulliken, XV, is now a Council member in Westchester County, New York. Al is now executive assistant secretary of the Chemical Specialties Manufacturers Association in New York. This is the trade association of so many of the chemical companies. I am sure that Al will be running into many of our classmates in his travels around the country. The other Council member is John D. Northup, XV, in Toledo, Ohio. John is director of engineering for the Owens-Illinois Glass Company. I hope that many others will become active in the work of the Educational Council. I have been their representative in our town of Winchester, Mass., and have found many pleasant contacts with high school students in trying to advise them of M.I.T. and scientific and engineering careers in general.

News from the American Chemical Society states that Sidney M. Edelstein, V, has been appointed a member of their Advisory Board. Sid is president of Dexter Chemical Company of New York. He is also chairman of the Archives Committee of the American Association of Textile Chemists and Colorists. I am sure that many of the articles in the Archives are ones which he has written, because he has been so active on research and development work in the field of textile chemistry.

Carroll L. Wilson, XV, has been in the papers again for his work as a member of the panel which prepared the Rockefeller Report on this country's military preparedness. In addition to being president of Metals and Controls Corporation of Attleboro, Mass., Carroll has been active in civic affairs, being a member of the board of trustees of the Rhode Island School of Design, a trustee of Rhode Island Hospital, and a director of the Rhode Island Hospital Trust Company.

Many of you have received the letter from our Class Agent, Don Gilman. He points out that 371 members of our Class did not make donations to the Alumni Fund campaign and our reunion gift in 1957. We need the co-operation of all of you, particularly since M.I.T. is taking such an important part in meeting the educational and research challenge placed before this country by Russia. We need more pledges, and we also need payment on the pledges which have been made. You will recall that 66 members of our Class pledged to contribute $7,353 toward the reunion gift in 1958, $6,153 in 1959, and $500 in 1960. 253 members of the Class who donated to the reunion gift in 1957 did not pledge for the three succeeding years. How about coming through with some significant contributions this year and in succeeding years because we cannot rest on our laurels? We made a tremendous record in 1957. Let us keep up the good work with some more outstanding contributions from all of us! — ROLF ELIASSEN, *Secretary*, Room 1-138, M.I.T., Cambridge 39, Mass.

1933

As these notes are written (February 17, just after the blizzard of the winter) we can report a most heartening response to our first call to arms (meaning our 25th). Here is the list of those who hope to come; count them, son, there are 196 of you.

Wen Allen, Mickey Alpert, Frank Amadon, Jack Andrews, Bill Andrews, Ed Atkinson, Steve Avakian, Bill Barbour, Bill Baur, Bob, Bayer, George Bentley, Keith Beyette, Wally Bohrer, Lance Bowen, Vernon Bowles, Maurice Brashears, Dapper Bregman, Herb Breitstein, Charlie Britton, Bill Brown, Newt Buerger, Fuzzy Cahaly, Cortlandt Campbell, Bill Carberry, Joe Carbonell, Charley Cashman, Tom Chadwick, Dom Chiminiello, Rod Chipp, Ellery Clark, Ken Clark, Dayt Clewell, Ed Coe, Morris Cohen, Dill Collins, Rog Congdon, Steve Crick, Ralph Cross, Dan Daniels, Bob Dodd, Mel Dolan, Walt Duncan, Russ Eddy, Carl Ekwall, Bruce Ennis, Jack Farmer, Clare Farr, Fliv Faulkner, Fritz Feustel, Don Fink, Tom Fitzpatrick, Lou Flanders, Bob Forbes, Dick Fossett, Vincent Frisby, Chuck Fulkerson, Tom Galvin, George Garcelon, Ralph Garrett, Margaret Kelly Geddes, Paul Genachte, Marc Gilbert, Rolly Glenn, Al Goldberg, Nat Goodman, Ed Goodridge, Dick Gorman, Bill Gray, Greenie Green, M. N. Green, Herb Grier, Morris Guralnick, Pop Hanlon, Cy Hapgood, Bill Harper, Norm Harris, Gardner Harvey, Art Hayden, Johnnie Hayes, Bob Heggie, Warren Henderson, George Henning, Bob Hentschel, Benna Herlich, Frank Heselton, Al Hinkle, Dick Hodgdon, Abner Hopkins, Emerson Horne, George Huff, Ev Hume, Art Hungerford, Bill Huston, Leon Hyzen.

George Isserlis, Art Jackman, Ferdy Johnson, Mun Kessler, Gus Kidde, Henry Kiley, Gerry Kincade, John King, Bill Klee, Julian Klein, Fred Kressman, Fred Ladd, Barney Lapidus, Ben Liberfarb, Prentiss Lobdell, Ed Loftus, John Longley, Norm Loud, Waldron Macdonald, John MacIsaac, Bob MacKay, Horace MacKechnie, Earle McLeod, Chuck Macmillan, Ing Madsen, Manky Mankowich, Kirt Manley, Mal Masters, Mal Mayer, George Maynard, Jim Merrill, Jim Mills, Bob Mills, Al Minkus, Cal Mohr, Dick Molloy, Len Morrison, Dick Morse, Ken Moslander, Fred Murphy, Bill Murphy, Dave Nason, Paul Netherwood, Bob Nichols, Win Partridge, Al Payne, Dick Payzant, Otto Peterson, Ed Pierce, Bill Pleasants, John Potter, Otto Putnam, Leight Rickards, Bob Richardson, Dick Robinson, George Ropes, Werner Rose, John Rumsey.

Sam Saslaw, John Sbrega, Bill Scarborough, Duke Selig, Walter Sheblessy, Mike Shnitzler, Otis Shurtleff, Ed Simpson, Newland Smith, Bob Smith, Dick Smith, Omar Herbert Somers, Bill Sorensen, Ernst Spannhake, John Sterner, Joel Stevens, George Stoll, Gene Sullivan, Francis Sullivan, Harry Summer, Carl Swanson, Walter Swanton, Adam Sysko, Berj Tashjian, Harris Thompson, John Trump, Jim Turner, Dick Valentine, Frank Vanucci, Francis Vaughan, Jim Vicary, Sam Wall, Stan Walters, Dick Warner, Elmer Waterman, Bob Way, Burt Webster, Warren Webster, Westy Westaway, Joe Wetherell, Bob White, Beau Whitton, Jack Williams, and Dick Zimpel.

What's more heartening, 106 wives plan to grace the campus for the three day reunion. And the replies continue to come: And we've had good response on the questionnaires, too, with snapshots galore, some dating back to '33. All this, of course, will make excellent grist for the class record that Ed Goodridge is planning. Help him out, fellers, and return your questionnaire if you've not already done so. We have a deadline, you know, to get the publication in your hands when you come aboard on June 14. Since no box tops are required, get word back to us pronto that you will try to be with us on June 14. Complete details a bit later to those who have expressed even mild interest.

And a happy spring to all of you. — R. M. KIMBALL, *Secretary*, Room 3-234, M.I.T., Cambridge 39, Mass.

1934

My main source of information this month is Hank Backenstoss, who writes from Boston as follows: "Dear Johnny — Thanks for the invitation to write a letter for the class column. It's always a pleasure. In the past I've addressed it to the Class; this time I will address it to you.

"Of course, the event uppermost in my mind at this moment is our *first* child — Martine Susan, who arrived on January 7, only five weeks ago! *First* seems like a strange word. While you and the rest of our classmates are worrying about college for your offspring, I'm becoming initiated into the world of diapers and diaper pins. Well, anyhow, Martine and mother are both fine. The French influence continues, as you may judge from the name. The young lady can be Martine in France and Susan in the States. When she gets off her milk diet she will probably drink wine in both places.

"The class news uppermost in my mind is our decision to support two half-tuition scholarships commencing immediately, one and one-half years ahead of the time

we originally planned. This move has been taken because we recognize the serious scientific and engineering crisis which faces the nation, and we want to do all we can to help meet it. What the officers have done is to use part of the interest income on our 25-year gift funds instead of allowing it to accumulate to 1959. We have selected two promising students to receive the aid, a boy from New York and a second from Michigan. Both are good scholars and show promise.

"The Class Fund itself is showing steady progress. I would say we are now near the $60,000 mark. What surprises me is that occasionally I hear from a classmate who does not know what our 1934 Compton Scholarship Fund objective is, or even that we have such a 25-year gift project. Surely we have given ample publicity to this plan to help the most desirable and promising students come to the Institute by making scholarships available to those of limited financial means. When you consider the high caliber of the Institute's program of education and the need for top scientific and engineering talent in our free society today, I know of nothing in which our classmates can participate to better advantage. I can only hope that those who have been on the fringes of our project up to now will come to understand what it means over the long haul and will plunge into it with the rest of us. Whether we know it or not, the harness is now on our backs; and the shape of things to come will be determined by what we do today. Best regards, and all my wishes for success at Case. Sincerely, Hank."

Since I am no longer at M.I.T. where I can stick my nose in all manner of 1934 business, please send me all news about yourselves or any other members of the Class of 1934. — *Secretaries:* WALTER MCKAY, Room 33-217, M.I.T. MALCOLM S. STEVENS, Room 1-139, M.I.T., Cambridge 39, Mass. JOHN A. HRONES, Vice-president for Academic Affairs, Case Institute of Technology, Cleveland 6, Ohio.

1935

The 25th Year Gift campaign is now well under way after much hard work and many frustrations; and thanks are due to Dick del'Etoile, Fund Chairman, and Bill Abramowitz, Special Gifts. They have requested classmates to accept appointments as local chairmen throughout the country; and although a few refused to co-operate, most of the areas are now covered. I am sure every member of the Class will pitch in 100 per cent and help make our gift fund a great success. You know, the more on these committees, the lighter the work for all.

Please be sure to mark any gifts to the Institute 'CLASS OF 1935 GIFT'. Otherwise, they will go into the general fund, which is fine if that is your intention; but we do want our gift fund to be as large as possible. Joe Conrad of the Alumni Fund office has advised me of the following number of contributors of $100 or more in our class: 1956 Fund, 17; 1957 Fund, 18; 1958 Fund as of January 17, 15. If you were among them, many thanks; if not, maybe you can see your way clear to join them.

The following is the list of local chairmen (why not give them a call and see if you can help?): Boston area, William L. Abramowitz; New York area, Edward C. Edgar and Bernard H. Nelson; Chicago area, Alfred S. Alschuler and Paul W. Daley; Washington, D. C., Baltimore area, Richard L. Parli and Edward H. Taubman; Philadelphia area, Hal L. Bemis; Indianapolis area, Buckley Crist of Muncie, Ind.; Hartford area, Richard L. Hughes; Buffalo-Rochester area, Thonet C. Dauphiné and Roger Brookman; Cleveland area, Elmer D. Szantay, John D. DuRoss, and John A. Bradner; Detroit area, Charles A. Piper; Milwaukee area, President John H. Colby; Cincinnati area, Lars H. Sjodahl and Philip Rhodes. We have had no chairmanship accepted on the West Coast, but we have hopes that one or more of the following will help out: Leo Epstein, Irvington, Calif.; Harry Fidler'34, Oakland; Gerald W. Farr, San Francisco; Karl Achterkirchen, North Hollywood; Douglas Chalmers, Gardena. In the miscellaneous areas several names have been suggested, and we hope they will accept when contacted and will follow through.

Once in a while, not too often unfortunately, we have a volunteer, and it's quite a pleasure. Charles H. Ross of Drexel Hill, Pa., sent a note enclosing a substantial contribution and offered his services — thanks, Charlie. Hank King, Class Agent, had been working along with Dick and Bill on the committee, helping to get the wheels rolling.

Jack Colby was in town a while ago. Although I did not get a chance to see him, he soon sent me some news for these notes. John Waferling, Course IV-B, is manager of Engineering Services at Inland Steel Products Co., Milwaukee. Jack Ballard, XV, is vice-president of Sterling, Inc., Milwaukee; Max Nohl, IX-B, is president of Nohl Submarine Enterprises in the same city. Art Linn, XIV, is with Metal and Thermit Corp., Chicago, but works out of Racine, Wis. Bill Cross and Art Croxson are with Kimberly-Clark Corp. in Neenah, Wis. Carson Brooks, XIV, is assistant research director for Reynolds Aluminum; and Bill Bennett, XV, is assistant comptroller there. Lars Ekwurzel, IX-B, is with a New York advertising agency, McCann-Erickson, Inc. Paul Daley is in Aurora, Ill., with All-Steel Equipment Co. Dick Parli has his own architectural firm in Arlington, Va. Jack was supposed to meet Ed Loewenstein in Greensboro, N. C., last fall; but Ed was down with the flu. Note: he has recovered. Bis Alderman is a partner in the firm of Alderman and McNeish, architects and engineers, in Springfield, Mass.

The following members of our Class attended the Winter General Meeting of the American Institute of Electrical Engineers in New York in February and presented papers: Perry H. Ware, VI-A, Simplex Wire and Cable Co.; Ken Mathes, VI-A, General Electric Co.; Clark Nichols, Ohio Edison Co.; and Joseph Lempert, Westinghouse Electric Corp. James W. Libby, Jr., is undertaking studies of technical procedures and organizational methods at E. I. du Pont de Nemours and Co. He has been with the company since 1938.

I attended the Midwinter Meeting of the Alumni Association and met Ben Beede, II, who is manager of the Standard Conveyor Co. and lives in Concord, Mass. George Knapp was there, although he had just moved to Boston two days before. He is just starting as director of engineering at Sanborn Co. in Waltham. George has been in Port Washington, N. Y., for the past eight years with Servomechanisms, Inc., a military avionic manufacturing company, and is looking forward to working with an organization not primarily serving the military. He is now looking around for a home for his wife and three children. Obie Denison, Secretary of the Class of 1911, sent me a picture from the *Framingham* (Mass.) *News* showing Stocky Stockmayer's picture as a member of the Wayland Community Chorus group. Walter, by the way, has joined the class gift committee.

Samuel N. Alexander, VI, Chief, Data Processing Division, National Bureau of Standards, is representing the American Institute of Electrical Engineers on the National Joint Computers Committee, which helped plan the International Conference in Geneva scheduled for June, 1959. Captain William M. (Trigger) Hawkes, XVI, is back in the Antarctic. As Admiral Byrd's pilot, he has flown more miles over the Antarctic than any person in history. Do not forget the Class of 1935 Gift Fund. — FRANCIS W. MULDOWNEY, JR., 1109 Boylston Street, Chestnut Hill 67, Mass.

1936

A description of the Class of 1936 in a dozen words or less — the Class whose members we often hear about but never hear from.

Joe Burns, better known as Squire Burns in these parts, has just taken over a new estate. More house, more lawns, more do-it-yourself, and more fun. In case any of you brother classmates need the exercise and wish to help with the chores, the new address is Maplewood Drive, Cos Cob, Conn. Plenty of projects and tools available — come and bring the children (only those old enough to handle tools welcome). Animal lovers may take turns clipping Bosco, the poodle. Should the crowd be too large, don't get discouraged; just stroll over and help Bill Fingerle. Bill recently moved to the same area — to be exact, Mimosa Drive, Cos Cob. — JIM LEARY, *Secretary*, One Putnam Park, Greenwich, Conn.

1937

Art Zimmerman writes: "On my desk at home somewhere are various notes and mementos of that wonderful 20th reunion at The Belmont last June. I had ambitions in the summer to write several of the fellows with whom I had particularly pleasant experiences telling them so; but, alas, that, like so many other good intentions, seems to have been pushed aside by more pressing demands of the moment. So now, thanks to receiving your birthday greeting card, Bob, I am going to take a few minutes to pass on some comments for the class notes.

"First of all, those who didn't attend

the 20th reunion missed a truly wonderful time. The gang who arranged that program deserve a lot of credit, and the absentees were the losers, believe me. The new slate of officers elected then should do a fine job for our Class in the years ahead of us, and I know that we can look forward to the 1962 reunion as a truly memorable experience. You may recall that I made rather a nuisance of myself taking pictures. All of this effort has resulted in a collection of approximately one hundred 35-millimeter color slides which do a creditable job of telling what happened at the 20th reunion from the opening cocktail party to the dinner in Rockwell Cage. I have one picture of Dick Young about 3:00 A.M. with a fish net (or something) over his head, and another of Phil Peters holding one of the '37' table signs before the altar in the M.I.T. Chapel. Perhaps some of the group would be interested in looking at these pictures in 1962, and I plan to bring them along. No charge, for admittance will be strictly voluntary!

"A small '37 reunion was held Halloween evening at the Riverside in Cambridge Springs, Pa. Agnes and I had gone there for a week of loafing and Halloween night asked George and Janet DeArment to run over from Meadville for dinner with us. We stopped at the DeArments' home briefly the next afternoon on our way back to Cleveland. At the annual Cleveland Alumni Luncheon for undergraduates December 27, Dick Young, Rutherford (Colonel) Harris, and I represented the Class of '37."

A fine report Art, and I wish all of the Class would follow suit and reply in a similar manner when they receive their birthday greeting card. Art is with the Steel Improvement and Forge Co., Cleveland, Ohio, as vice-president in charge of sales. The Zimmerman's — Art, Agnes, and their one child — live on Groveland Road, Cleveland, Ohio.

Ralph Webster, Vice-chairman of the Boston district in our class gift program, was born on November 4, 1915. He attended the Medford public schools and graduated from high school in 1933. Ralph then went to M.I.T. and was graduated with the degree of bachelor of science in Civil Engineering. He was a member of the Phi Mu Delta fraternity. Ralph and I worked on our thesis together and solved the complex problem at Cottage Farm Bridge and Commonwealth Avenue. So far, no one has acted on our plan; might be that it is cheaper just to have a police officer direct the traffic. Upon graduation, Ralph worked for different contractors in the construction of roads, docks, and steel erections. At present he is the treasurer of Owen J. McGarrahan Co. of Cambridge, Mass., who are steel erectors in eastern New England. Ralph is married and has three daughters. He has the ski bug, which takes care of the winter months, and has just acquired the golf bug, which takes care of the summer months. As he says: "Between the two activities I will keep the working time down to the minimum." The Websters — Ralph, Bunny, and their three daughters — live at Independence Road, Concord, Mass.

Joe Heal reports that the class gift program is gradually gaining momentum but that we must all report our pledges right off in order to complete the plans. Cooperate by filling out your pledge slips today; and mail them to either Joe Heal or the M.I.T. Alumni Fund. Due to human errors, mostly mine, a few corrections and additions are necessary in the list of vice-chairmen of our class gift program. I had Stan Zemansky in Rochester or Buffalo, whereas Stan is head of our program in Los Angeles, Calif.; and Ralph Chapin, in addition to the business gift solicitation, is also vice-chairman of the Rochester — Buffalo Area. Also, Dick Young is the vice-chairman in the Cleveland area.

We continue our request for biographical sketches on the members of our Class. This issue those of us whose last names begin with either *I, J, K,* or *L* are specifically urged to send the pertinent information about the different positions they have held; their family; books; pamphlets or articles they have written; their Army career; clubs; travels; and so forth.

Just received a letter from Ernie Ferris, in which he reports: "For the past eight years I have been on one-way clutches for Borg Warner in Bellwood, Ill. I get together occasionally with Bob and Rita Brauer and their clan of five. Bob is now living in Evanston, Ill., near the lake, and is working at Standard of Indiana's Chicago Headquarters. Only other '37 men I've seen in Chicago recently is Goodwin deRaismes, who is now with A. T. Kearney, a management consultant firm. Last summer I had the pleasure of visiting with Fred Ferrary and his family near Bridgeport, Conn. Fred, the engineer's engineer, is working at American Machine and Foundry Co.'s Research and Development center near Stamford, Conn. He and his family were quite happy, even though they'd been transplanted from their native Brooklyn.

"This Christmas I got a newsy card from Doctor Ray and Phyllis McFee, who are now out in Arcadia, Calif., where Ray's running one of the laboratories for Aerojet. They moved out from Wellesley, Mass., about two years ago; and they and their two girls seem to be enjoying it very much. I also heard at Christmas time from Mike Zinchuck, who is now located in Springfield, Mass., and doing electronic work with American Bosch. Dom and Phyllis Cestoni also dropped a line from someplace in New Jersey. The last time I saw Dom was just before our 15th reunion, at which time he was busy building a house in his 'spare time.' Dr. Bill Bakarian, formerly of Belmont, then London and Liverpool, England, after the war, with his own 'Almag' Aluminum Pressure Cooker Manufacturing Co., is now happily married and residing in Chattanooga, Tenn., where he is general manager and director of Cramet Division of Crame Co. and Republic Steel. Bill's doing his darnedest now trying to find end products for all the titanium he's making. Just before last Christmas we ran into each other in adjacent phone booths at La Guardia Airport — then we had a short but pleasant evening together over a few drinks."

Great to hear from you, Ernie, and best of luck with the golf game. Ernie, Alyce, and their "two and one-half" children (congratulations) live at Elinor Avenue, Downers Grove, Ill.

Edward Corea was born on November 15, 1913. He prepared for M.I.T. at Mechanic Arts High School, and was graduated from M.I.T. with the degree of bachelor of science in Electrical Engineering. Upon graduation he joined General Electric Co. at Bridgeport, Conn. From 1939 to 1940, Ed worked for the Navy Department as a junior electrical engineer; and from 1940 to 1946, he was at Boston Naval Shipyard as an electrical design engineer on Ships Construction, and Conversions. Ed then joined M.I.T.'s Division of Industrial Cooperation in the Flutter Research Laboratory. During this time he also took a course in aeronautics. In 1948, he again joined the Boston Naval Shipyard as a supervisor of Intercommunication and Fire Control. At present he is supervisor of the Electrical and Electronic Design Branch, Quincy, Mass., U. S. Navy.

Ed is a member of the Boston Section of the American Institute of Electrical Engineers and the American Society for Quality Control. In 1955 he was president of the Boston Chapter of Technical Naval Supervisors and attended their national convention in Seattle, Wash. Ed is married, wife's name is Marie; and together with their seven children, they live at 14 Mann Street, Hingham, Mass. I believe Ed is very close to the record for our Class in the children department. His only competitor is Cliff Lytle who, as of June, 1957, claims the record with eight. The above is not intended to start a contest, but only to record the facts.

Just received word that Bob Cloud, along with Lars Beckman and John G. Trump'33, all of the High Voltage Research Laboratory, Department of Electrical Engineering, M.I.T., have recently had an article on "Barium Absorption Pump for High Vacuum Systems" published in the *Review of Scientific Instruments,* November, 1957. Also received notice that Gordon B. Wilkes is a candidate for the School Committee in Lynnfield, Mass. Duff has been very active in the town, and we wish him success in the elections in March. The Wilkeses, with their four children, live at 326 Lowell Street, Lynnfield Center, Mass.

The following changes of address have been reported to us: Howard E. Lind, Sias Laboratories, 227 Summit Avenue, Brookline, Mass.; John C. Hitt, 80 Nichols Road, Cohasset, Mass.; Dr. Herbert H. Anderson, Drexel Institute of Technology, Chemistry Department, 32d and Chestnut Streets, Philadelphia, Pa.; John B. Pitkin, 19314 Halstead Street, Northridge, Calif.; and James R. Cowles, 1537 East 10th Street, Tulsa, Okla. — ROBERT H. THORSON, *Secretary,* 506 Riverside Avenue, Medford 55, Mass. Professor S. CURTIS POWELL, *Assistant Secretary,* Room 5-323, M.I.T., Cambridge 39, Mass. JEROME E. SALNY, *Assistant Secretary,* Egbert Hill, Morristown, N. J.

1939

Manning Morrill has been elected vice-president for Operations at the Cryovac Company. Manning has been general manager for operations since January,

1957, and has been responsible for the over-all activities of the company's Operating Divisions in the United States and Canada. Manning is enjoying life in Winchester, Mass., with his wife and four children; and as of this writing (February 16, 1958) is probably arranging some inspection trip to one of the industrial outposts with warmer climate.

George Beesley made the headlines, picture and all, in the papers at Lynnfield, Lynn, and Wakefield, Mass. From the article it is easy to see that George has been very busy trying to make his community a better place to live in. Among other things George served on committees for new school construction, for Boy Scouts, for his church, for a social couples' club; but what I don't understand is what he did on the Tandem Club. Since George can write his own column in these notes when he gets the urge, I hope he'll get that feeling and tell us soon whether in this day of space travel and Buck Rogers gadgets he knows of something nice and simple we can all understand — like the Bicycle Built for Two.

Dick Christie was honored recently when he was named to an eight-man committee of the National Academy of Sciences. Membership on this committee is honorary and is considered national recognition of achievement in his field. Dick is manager of product planning in the dishwashing and garbage disposal divisions of General Electric at Louisville, Ky.

Elliott M. Gordon of 234 Lafayette Road, Hampton, N. H., is in line for congratulations. He was elected president of Towle Manufacturing Company. George Blake of 44 Scarlett Street, West Boylston, Mass., has been promoted to lieutenant colonel in the Army Reserve.

Recently, 75 leading radio engineers and scientists from the U. S. and other countries were named fellows of the Institute of Radio Engineers. 14 Tech men were named, and our Class was represented by Pierre M. Honnell, who was cited for distinguished teaching and research in applied electronics; and by Rodolfo M. Soria, who was cited for his contributions to high-frequency transmission and to engineering management.

Participating in the Winter General Meeting of the American Institute of Electrical Engineers were: Pierre M. Honnell, who gave a paper entitled "Matrix Programming of Electronic Analog Computers"; Charles A. MacArthur, who gave a paper entitled "An Experience with Breaker Restriking and Arrester Destruction on Pennsylvania Power and Light Company"; and Joseph R. Perkins, who gave a paper entitled "Operating Experience with Thermoplastic Insulated Wire and Cable in Chemical Plants."

John E. McGregor spoke before the American Institute of Electrical Engineers in Washington during January. His subject was "Reliable Design and Development Techniques," and he said the transition from concept to hardware requires considerable ingenuity. Some specific problems are: gear box, rotating deflection coil, and heat flow.

Colonel Charles J. Jeffus, 104 Edgewood Road, Towson Estates, Baltimore, wrote: "After spending summer in Europe getting the education only travel can give, we moved to Baltimore. Now business manager, Nuclear Division of the Martin Company. Attended Science Society Regional Conference in Pittsburgh last December and enjoyed excellent addresses, meeting Dr. Stratton and seeing many M.I.T. friends." — HAL SEYKOTA, *Assistant Secretary,* 416 Calle Mayor, Redondo Beach, Calif.

1940

Chet Watts is coauthor of a paper on "Automatic Impedance Plotters" which was delivered at the Institute of Radio Engineers meeting at Tech on October 1, 1957.

Ralph Thompson has been named manager of the newly formed chemical research and development department of Hagan Chemicals and Controls, Inc. Ralph is in charge of all chemical research and development and technical services for the company's household products, commercial detergents, industrial chemicals, and water treatment consulting divisions, including, among others, the well-known Calgon water conditioner. Ralph and his wife, Virginia, reside in Mount Lebanon, Pa., with their daughter, Pamela, 13, and son, Nicholas, 7.

Sam Goldblith is a contributor with Bernard Proctor'23 of a section on the "Present-Day Status of Radiation Sterilization" in the American Association for the Advancement of Science Symposium, Volume 49, entitled *Atomic Energy and Agriculture.*

Jim Moore has been named general manager of the N.R.C. Equipment Corporation, a subsidiary of National Research Corporation. Jim, thus, is now in charge of development, production, and sales of one of the country's largest lines of high vacuum equipment. Don Ross has been elected a national director of the Society of Chartered Property and Casualty Underwriters. Don is also assistant secretary of the Phoenix of Hartford Insurance Company and lives in Hartford, Conn.

John McEvoy, who is lieutenant colonel in the Chemical Corps, is attending the Nuclear Weapons Employment Course at Fort Leavenworth, Kansas. After completing this course, John will return to his duties as Chemical Corps Liaison Officer at the Air Force Armament Center, Eglin Air Force Base, Florida. John and his wife, Edith, have three youngsters: Patricia Ann, 9; Janet Ellen, 7; and Karen Jean, 2.

Divo Tonti, who is executive director of the New Jersey Highway Authority, was elected president of the American Bridge Tunnel and Turnpike Association. As an indication of the excellent work done by Divo, the Garden State Parkway, which is under his charge, was ranked as the safest superhighway in the nation during 1955 and 1956, by virtue of the low accident and fatality rates recorded on its roadways during those two years. — ALVIN GUTTAG, *Secretary,* Cushman, Darby and Cushman, American Security Building, Washington 5, D. C. SAMUEL A. GOLDBLITH, *Assistant Secretary,* Department of Food Technology, M.I.T., Cambridge 39, Mass. MARSHALL D. McCUEN, *Assistant Secretary,* 4414 Broadway, Indianapolis 5, Ind.

1941

A reminder: dues are due. If you haven't yet done so, please send your two dollars to the Secretary-Treasurer.

Bill Hargens reports: "The '41 slate was re-elected to run the M.I.T. Club of Philadelphia in January (Sam McCauley, president; Herb Moody, secretary; Yours Truly, treasurer; and John Murdock, executive committee). In the recent press, I had an article in *Review of Scientific Instruments* for November, and in *Electronics* for January 17."

Others making contributions to the technical literature recently are Orison Pratt, who gave a paper entitled "Treeing in Polyethylene as a Prelude to Breakdown" at the Winter General Meeting of the American Institute of Electrical Engineers; Monroe Norden, who spoke on "Deterioration and Failure as a Stochastic Process" at the fourth National Symposium on Reliability and Quality Control in Electronics, sponsored by the Institute of Radio Engineers, Electronic Industries Association, American Society for Quality Control, and American Institute of Electrical Engineers; and Basil Staros, who coauthored and delivered a paper on "Selection of an Aerodynamic Configuration for Improved Beam Rider Guidance" at the annual meeting of the American Rocket Society. Basil is engineering section head for system analysis, weapon system engineering department, air armament division, of the Sperry Gyroscope Company.

Dick Engelman writes: "Still with Procter and Gamble in overseas engineering division. Went to Belgium in 1955 as resident engineer for a new synthetic detergent factory. Returned in fall of 1956, and in spare time designed and handled general contracting work on our new house. Moved in during August of 1957, just in time to start our oldest child in the first grade (have one boy and two girls)."

William Roddis has been named to head the newly formed industrial and prefabrication sales division of the Roddis Plywood Corporation of Marshfield, Wis. In addition, he will continue to serve as secretary of the firm. He has previously held positions as plant inspector and plant manager. Major General Leighton Davis is now commander of the Air Force Missile Development Center near Alamogordo, New Mexico. This installation, staffed by 7,500 Air Force and civilian personnel and with an annual payroll of $38 million, has responsibility to conduct research and development of guided missile subsystems and components; test and evaluate missile weapon systems, missile operational techniques, and associated equipment; and aeromedical research and development. Before assignment to this base, General Davis was director of development for the Air Research and Development Command; he was previously commandant of the Air Force Institute of Technology.

James McNitt has been made vice-president and general manager of Bristol Laboratories of Syracuse, N. Y. He joined

the firm in 1944 as senior chemical engineer. Since that time he has successively held the offices of director of chemical engineering, assistant to the plant manager, plant manager, and vice-president in charge of manufacturing. Before joining Bristol, he was an assistant professor at M.I.T. and director of the Bangor Station of the School of Chemical Engineering. John Wilson, recently appointed general manager of marketing for Metals and Controls Corporation, of Attleboro, Mass., has been elected vice-president in charge of sales at a recent meeting of the board of directors. James Austin, a professor in the M.I.T. Department of Meteorology, has been elected to a three-year term on the Council of the American Meteorological Society.

We record with regret the passing of two classmates. From the *Boston Herald* of February 3 comes the following: "Charles Loring Hall, Jr., 39, of 46 Bird's Hill Avenue, Needham, a Navy veteran active in civic affairs, died yesterday in Lemuel Shattuck Hospital, where he had been in an iron lung for two and one-half years. A Boston native, he was graduated from M.I.T. in 1941 and saw service in World War II. He was a lieutenant commander in the Civil Engineer Corps, U. S. Navy Reserve, and was an engineer for Jackson and Moreland, Boston. He leaves his wife, Mrs. Emily Nassau Hall; a daughter, Patricia; two sons, Charles III and Thomas; his parents; and a brother." Also, William Burton died on January 20, 1957: no other details were reported. Our sincere sympathies go to the families of both men. — Ivor W. Collins, Jr., *Secretary*, 28 Sherman Road, Wakefield, Mass. Henry Avery, *Assistant Secretary*, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

1942

Bob Rines has been a patent attorney in association with his father ever since shortly after the end of the second world war. Last June our reunion was treated to the non-technical and non-legal side of Bob's activities. We thoroughly enjoyed the musical suite that he composed and played. Since that time, however, it has taken the combined efforts of his wife, Dottie; Jack Sheetz; and your Secretary to get him to write about his musical activities. Here is his letter:

"It might sound peculiar for a lawyer to explain how he didn't finally end up as a physicist instead of a musician; but, 'you've asked for it.' Coming from a musical family that traces, on one side, from an alleged conductor of one of the Czar's orchestras in the mid-1800's (and God knows what the traces are on the other side) to former Boston bandleader Joe Rines and a host of cousins in the New York Philharmonic and other orchestras, it is not surprising that I was presented with a fiddle at age four.

"My musical education, under the tutelage of Symphony players (the violin and flute) and an excellent pianist, was supplemented over the grammar school and high school years in Brookline by participation in the various school orchestras, bands, and ensembles. I studied harmony at the Harvard Summer School, also. Inevitably, the degree of proficiency was reached where an occasional concert or performance before doting women's organizations was given.

"On the side, we had a 'professional' high school dance band, 'Six Aces of Rhythm.' After a successful season, one of the 'Aces' had a falling out with the others, who thereupon degenerated into (or perhaps improved as) 'Five Aces.' This, in turn, gave rise to the birth of 'Watermelon Rines and His Boys,' and, with it, the first competition (and, I believe, the last) between dance bands at Brookline High.

"It is not surprising, therefore, that I was only too anxious to enter Tech after my junior year at Brookline, even if it meant studying physics, instead of music. Perhaps the only real diversion at Tech, however, was the writing of a few popular songs and a few two-piano numbers that were locally performed. By our senior year, I had completed the 'M.I.T. Suite' that your lovely wife, and our unsuspecting classmates, finally had to endure one boisterous (fortunately) cocktail hour at our 15th reunion on the Cape. The 'Suite' was originally to have been played on two pianos M.I.T. night at the Pops in the spring of 1942. While it may not have disposed of dictators or made democracy safe, the last war did have at least the salutary effect, therefore, of putting off that performance for 15 years.

"You might be interested to learn that, upon my assignment in 1942 as a radar officer to the Royal Artillery in England, I wrote the musical score of a British Army show. The show, 'REMEDy for Blues,' toured England, cheering up the blitzed people and the military personnel. Everyone seemed to be cheered up, that is, until my commanding officer in London picked up the *Express* and found a picture of an 'unidentified American Army officer' who was touring England with lovely performers from the A.T.S. (their W.A.C.S). He promptly identified the officer and I went back to radar.

"Repulsed in my musical endeavors as a physicist, I turned to law — and, as you know, there I have been ever since, except for an ancillary venture with recording a few popular tunes a few years ago. (Did I say 'popular'?)

"Upon re-reading this I wonder why in the world you asked me to write an account of my adventures in music. Is law so dull? Oh yes, I hope now that the 'M.I.T. Suite' has been orchestrated (with an assist from Kostelanitz' former orchestrator, Phil Wall), it may be performed for all to endure on a grander scale — suffering through the mechanized agony of 'Industry'; the light-heartedness of 'Relaxation by the Charles'; and the nothingness of 'Co-Education.'"

We report with great sadness the death of John R. Thompson after a very short illness, in the midst of a very busy industrial career and active participation in community activities. John was an industrial engineer at the Package Machinery Company of East Longmeadow and a prominent town official in South Hadley, Mass.

Among John's many activities, in addition to being supervisor of the Standards and Methods Department at Package Machinery, he was an instructor in applied mathematics at Western New England College in Springfield. He had been a member of the School Board in South Hadley since 1954 and served as chairman of that group for the past two years. It was during his tenure that a program for building a new high school, the renovation of an old high school, and additions to three elementary schools were made. He was a past president of the M.I.T. Club of the Connecticut Valley and a past president of the Western Massachusetts Society for the Advancement of Management; and a past Exalted Ruler of the Holyoke Lodge of Elks.

During his four years at Tech, John was a member of Dorclan, the American Society of Mechanical Engineers, the Catholic Club, and was a champion boxer in the 160-pound class in the Golden Gloves Tournament. After graduation, he worked with the Worthington Pump Company at the Oak Ridge, Tenn., installation in the manufacture of enriched uranium for atomic bombs. Following that, he was with the Fercleve Company and General Electric Company before joining the Package Machinery Company. John was very much interested in teaching and managed to find time to instruct, both in the local high schools and at Western New England College, in addition to his regular schedule of work as an industrial engineer.

His survivors are: his wife, the former Esther Flanagan; three children, Daniel J., Christine E., and David J.; his mother, who resides in Holyoke, Mass.; four brothers; and three sisters. We join in extending our condolences to his wife, his family, and his many associates, who will sorely miss this kind, able, and public-spirited man.

Your Secretaries send you their very best wishes. — Jack Quinn in Hawthorne, Calif.; Bob Keating in East Alton, Ill.; Ed Edmunds in Albuquerque; and Lou Rosenblum, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

1943

Watch Cuba! Our erstwhile faithful secretary, Dick "The Legal Eagle" Feingold, tossed me his quill and headed for a refuge from the New England weather. At this writing the temperature is five degrees and the issue is still in doubt whether Boston will be able to dig out of or must succumb to the latest 20-inch snowfall.

The "Barrister" claims his visit with spouse to Cuba is merely a much earned vacation, but I suspect it may have something to do with the anti-Batista revolutionaries. In any event, watch Cuba for revolutionary developments.

Returns are coming in regarding the June reunion. To date 87 class members, representing a total entourage of 168 persons, have indicated they will be at the Royal Club Hotel on June 13 to 15 for our 15th. 140 more of our cohorts haven't been able to jell plans, but are still interested. One classmate can't attend but is sending his wife. It promises to be a lively affair.

As a result of a mailing such as this,

one realizes how varied are the interests represented by '43. Some typical replies are as follows: Alfred Burrill sends his regrets but will be in Europe; H. D. Ferris is leaving on the Bermuda Race; (Mrs.) Katherine Hammond will still have school in session; Clint Kemp will be in Brazil; Stan Paterson will be in Europe; Ray Richards will also be abroad; and so it goes. Unless your reason is equal to or better than the above, we're counting on seeing YOU in June.

For any last minute changes in hotel reservations or information on the reunion, please contact the writer. Since I couldn't escape to Europe and was available, this labor of love was unceremoniously delegated by our reunion chairman, Ralph Leader. Is he back from Hong Kong yet?

Mort Goodfriend recently disregarded all economic storm warnings and successfully cast loose on a consulting career in marketing research. Dick Childerhose, formerly with Baldwin-Lima-Hamilton, is now sales manager for Dynametrics Corporation (formerly Wind Tunnel Instrument Co., Inc.). Steve and Barbara Brodie are living in a mansion George Washington built in Scituate, Mass. Steve is now with the Badger Manufacturing Co., after having straightened out the overseas oil interests and had a fling in electronic components. Ed Mikol'48, who started with '43 as Ed Mikolajczyk, has left Carrier Research to teach at the University of Wisconsin. Jim McDonough's Concord Control, Inc., is flourishing. Jim claims his machines can cut heart-shaped cams out of anything from hambones to ersatz diamonds. He is in the process of carving up the '43 questionnaire, so get yours in fast.

By the time this arrives, you will have received a dunning letter for class dues. This solicitation only comes up once every five years, so let's make a good showing. Ten dollars breaks down to only two dollars per year, or less than a nickel a week. See you at the Royal Club June 13 to 15. — T. KEMP MAPLES, *Acting Secretary*, 71 Cliff Road, Wellesley Hills 82, Mass.

1946

We have received a number of newspaper clippings this past month so will devote most of this column to them. One of them is the kind we never like to receive and find so hard to report. It concerns the death of Harland A. Gray, Jr. Harland was a lieutenant in the U. S. Navy and a pilot. He was a student at the British College of Aeronautics at Cranfield, England. On December 30, 1957, he was taking off in his British training plane, a Percival Provost, when his wing dipped and he crashed to the ground. Harland leaves a daughter and his wife, Judith.

Robert E. Scherr carried off one of the top prizes in a Boston newspaper contest last fall. His third prize won him the tidy sum of $5,000. Bob is a free-lance automotive engineer and plans to use the major portion of his winnings to finance the automotive projects that he conducts at his home, 24 Forest Avenue, Old Greenwich, Conn. Russell A. Foust, Jr., was married recently to the former Miss Catherine Marie LeBlanc, and they now make their home at 21 Thompson Avenue, Hingham, Mass. Both Russell and his wife work at the Research Division of Ionics, Inc., Cambridge, Mass. Theodore S. Bacon, Jr., who received his master of City Planning from M.I.T. and is now a professor and associate dean of Amherst College, recently spoke to the Richmond, Mass., Civic Association on town planning. Ted is a recognized authority on town planning, a member of the American Society of Planning Officials, past president of the Amherst Community Association, chairman of the Amherst Town Planning Board, and treasurer of the Mass. Federation of Planning Boards.

Joseph E. Guillemette has recently been appointed television transmission engineer, Boston area, for the New England Telephone and Telegraph Company. Joe transferred from M.I.T. after his freshman year in the great Navy upheaval and earned his degree at the University of Michigan. He was recalled to the Navy for Korea, serving aboard the *U. S. S. Adirondack*. Joe has been with the telephone company for 10 years. A. R. Mowlem gave a paper entitled "Tracking of Earth Satellites at the Vanguard Computing Center" at the Winter General Meeting of the American Institute of Electrical Engineers in New York, February, 1958. The architectural firm of Hudson and Ingram of Hanover, N. H., has announced that Charles H. Gray, member of the American Institute of Architects, has become a managing partner in the firm. Charles spent a number of years in Boston working on multimillion dollar hospitals. His new firm specializes in hospitals and other municipal buildings in the New Hampshire area. The General Electric Company has announced that three of our classmates are employed as engineers with the Missile and Ordnance Systems Department of G. E. in Philadelphia, working on the development of the nose cone for the Atlas Inter-Continental Ballistic Missile and Thor Intermediate Range Ballistic Missile. They are Alfred A. Little, Peter Nowak, and Peter S. Wright. Al Little is married, has three children, and lives at 210 Farnham Road, Havertown, Pa. Peter Nowak is married, has two children, and lives at 202 Overlook Avenue, Willow Grove 8, Pa. Pete Wright is also married, has three children, and lives at R. D. #1, Box 232, Hatfield, Pa.

One of our Class has recently been honored by the Institute of Radio Engineers. Lotfi A. Zadeh, Associate Professor at Columbia University, New York, was named fellow of the I.R.E. by the Board of Directors at its November 20 meeting; the award was made during the I.R.E. annual convention on March 26 in New York. The grade of fellow is the highest membership grade offered by the I.R.E. Lotfi was cited for his contribution of theory and teaching of time-varying networks and filters. John W. Taylor's newly built house at 4302 Wickford Road, Baltimore 10, Md., is now complete. All who are in the neighborhood are invited to drop in and help with the hundreds of minor details which never ever seem to be completed. Donald E. Burke, formerly production manager of the MKM Knitting Mills of Manchester, N. H., has been appointed service co-ordinator of Allied Products, Inc., at 4400 34th Street North, St. Petersburg, Fla. Allied Products is an industrial and building supply firm. John L. Wandrisco has recently been named manager of marketing for Latrobe Steel Company of Latrobe, Pa. John moves up to his new position from his post as general manager of Latrobe's former Special Products Division.

The formation of a new company, Data Controls Systems, Inc., at 39 Rose Street, Danbury, Conn., has been announced; and Weems E. Estelle will supervise their programs in automatic control. Weems was formerly manager of engineering for Thomas A. Edison, Inc., and prior to that was vice-president and general manager of McNab, Inc. He was founder and president of Annapolis Research Associates, Inc., and professor of electrical engineering at the U. S. Naval Academy and North Carolina State College. After receiving his S.B. from M.I.T., Weems earned his M.S. at North Carolina State College. He holds several patents in the field of instrumentation. He is a member of Tau Beta Pi, Sigma Xi, and Eta Kappa Nu honorary engineering societies and is active in the American Institute of Electrical Engineers and the Institute of Radio Engineers. Weems and his wife and two children now make their home at Black Rock Turnpike, Redding Ridge, Conn. Stanford D. Blitzer hangs his business hat in the same office as I, at the Boston Division of Minneapolis-Honeywell Regulator Company. Stan is the head of the Special Projects Engineering Department, a group which in the past couple of years has designed and produced rate gyro systems which are flying in Convair's F-102 and F-106 aircraft, as well as others. Before joining M.H., Stan spent three years at North American Aviation and two years at the laboratory for Electronics. The Blitzers and two daughters live at 10 St. Mary's Street, Newton, Mass. Kenneth B. Tuttle was promoted last year from group leader to supervisor of Northrup Aircraft's analogue computer facility. Ken is single and lives at 8532 Trask Avenue, Playa del Rey, Calif.

After receiving his S.B., Samuel Gusman stayed at M.I.T. to earn his S.M. in 1947, and then received his Ph.D. in Physical Chemistry from Brown University in 1950. He then joined Rohm and Haas Company in Philadelphia, became their senior chemist, and has recently been promoted to laboratory head, Solution Coating Applications Laboratory. His laboratory is in the Research Department and is devoted to the research and development of resins for use in solution coatings. Sam is married, has two children, and lives at 108 Waverly Road, Wyncote, Pa.

With that I'll leave you for this month. Best of luck in meeting the deadline with Uncle Samuel on the 15th. If you are not in the poorhouse next month, tune us in. We hope to be back. Please send news of yourself or others to JOHN A. MAYNARD, *Secretary*, 15 Cabot Street, Winchester, Mass.

1947

Some interesting news about Harl Aldrich highlights this month's notes; Harl

has entered practice as a consulting soil engineer in the firm of Haley and Aldrich, Cambridge, Mass. He's equipped to handle "any problem dealing with the soil as an engineering material!" At about the same time I received word that Don Holway is planning both a hydroelectric and a water supply project, $75 million worth collectively, in the Tulsa, Okla., area. Don is associated with his dad (Class of '15) in the firm of W. R. Holway and Associates.

Dick Knight, living in Wenham, Mass., is treasurer of General Vacuum Company, a new company formed to engineer, develop, test, and sell intermediate sizes of special high-vacuum equipment. In addition, they are working on an improved line of pilot-plant induction and are melting vacuum furnaces. Bob Harrison has been promoted to assistant production of the *Dallas Morning News;* he has been with the paper since 1948. Dr. B. G. Bromberg writes: "No change – still missile chief engineer, McDonnell Aircraft Corp., St. Louis, Mo."

Pete Portmann is presently with Westinghouse in Baltimore as an advisory engineer in the Communications Division of that company. Dr. Paul Fletcher is with Hughes Aircraft in Los Angeles as a research engineer. Dave Himmelblau'44 has been promoted to assistant professor at the University of Texas in Austin. Walt Galusha is now manager of electromechanical sales for General Electric in Burlington, Vt.

The Class of 1947 has been nicely represented in presenting papers and talks to engineering groups. Dave Campbell, hydraulic engineer for the New England Electric System, spoke to the American Institute of Electrical Engineers, Merrimack Valley Subsection, on "Construction of the 190,000 Kilowatt Littleton Hydroelectric Development on the Connecticut River." Bill Baker and All Berry presented separate papers at the Winter General Meeting of the A.I.E.E. in New York. At a recent American Chemical Society meeting in New York, John Kellett reported on the use of electronic computers in cutting basic engineering manpower; his findings indicated a 50 per cent time and manpower saving. John is a section head in the Computer Division of Esso Research and Engineering in Linden, N. J. Sam Mason spoke on the use of computers in R-C Network Synthesis at the Western Electronic Show and Convention.

Among the graduate group, two masters in city planning are working to help two cities alleviate their current difficulties in that field. Eric Grubb is city plan director of Cleveland, Ohio, and Herb Wieland has a similar post in St. Paul, Minn. Major Edward E. Bennett has assumed command of the 20th Engineer Battalion, stationed at Fort Devens, Mass. B. H. Ciscel has been appointed executive vice-president and general manager of Electronic Specialty Company in Los Angeles; his company manufactures aviation electronic components.. A computer invented by the late Dr. Malcolm S. McIlroy, designed specifically to work in problems concerning flow of liquids and gases through pipeline systems, was presented to Tufts University by a group of utility companies. George Coleman has the new title of assistant director of engineering with the firm of Pereira and Luckman in Los Angeles.

There are two nuptial announcements: Charles Brown married Janet Macrae Welsh on December 28 in Bronxville, N. Y.; they're currently residing in the Washington, D. C., area, where he's working at the National Bureau of Standards. Dave Clapp married Martha Jane Bassett of Methuen, Mass., in Methuen. Dave works at the Lincoln Laboratory.

By state, a rundown of class members who have address changes; new addresses noted. *Alabama:* Florence, Fred Adams; Montgomery, Major John T. McCabe. *Hawaii:* Hilo, Teichiro Tao. *California:* Downey, Henry L. Lee, Jr.; Los Altos, Howard Zwemer; Los Angeles, George Coleman; San Francisco, Dr. Joost Sluis and Victor Atkins; China Lake, Lieutenant John T. Wells. *Colorado:* Denver, Floyd J. Kreuze. *Connecticut:* South Glastonbury, Kenneth K. Klingensmith; East Hartford, Theodore Davis; Ridgefield, Edwin A. Rosenberg; Stamford, Ben Ranan. *Delaware:* Hockessin, Kent Hyatt. *District of Columbia:* Robert V. Maudlin, Henry P. Childs, Dr. Arthur G. Ashbrook, Jr., John K. Logan. *Florida:* Sarasota, Dr. Sidney L. Smith. *Georgia:* Atlanta, Dr. Dimitrios A. Polychrone. *Illinois:* Deerfield, Neil M. Blair; Highland Park, Stanley P. Lapin. *Maryland:* Baltimore, James O. Davis, Jr.; Patuxent River, Commander Herbert H. Hassenfratz. *Massachusetts:* Cambridge, Dr. Jordan J. Baruch; Framingham Center, Frederick W. Churchley, Jr.; Marblehead, Dr. Frederic F. Ehrich; Newtons, George R. Welti and Dr. Robert H. Rediker; Lincoln, Alan McClennan and Jacques A. F. Hill; Winchester, Richard J. Merrow. *Michigan:* Ferndale, Arthur Leslie; Livonia, Philip D. Gordon and Ju-Pei Li. *Missouri:* St. Charles, Dr. Ben G. Bromberg. *New Hampshire:* Hanover, Professor Charles C. Reynolds. *New York:* Dunkirk, Reverend George G. Brooks; Glen Head, Arthur M. Ross; New York City, John B. Sproul, Dr. Donald L. Thomsen, Jr., and A.P.O. 12, Lieutenant Colonel David G. Smith; Port Washington, Stu Farnum. *Ohio:* Columbus, Hubert I. Flomenhoft. *Oklahoma:* Tulsa, Dr. Arman F. Frederickson. *Texas:* Dallas, Mrs. Weston K. Norman. *Virginia:* Arlington, Commander Lucian J. Hunt, Jr.; Warwick, Frederick C. Grant and Warren Gillespie, Jr. *Wisconsin:* South Milwaukee, James W. Martin. *St. Thomas, Virgin Islands:* Francis B. Chalifoux – whew! – Arthur Schwartz, *Secretary,* 176 South Harrison Street, East Orange, N. J.

1948

We had an interesting letter this month from the father of Daniel Payne Hale, Class of '48. Mr. Hale said in his letter that Dan is an Aurora and Airglow Physicist with International Geophysical Year and has been at Byrd Station, Antarctica, for a little more than a year. He is expecting to leave Antarctica soon and return to the States; but he will, in all probability, stop over in New Zealand for a short visit.

Francis E. Jablonski writes that he is located at General Motors Tech Center in the Nuclear Power Engineering Department. He is concerned with reactor physics problems. He and Mrs. Jablonski reside at 21 Manor Road, Birmingham, Mich.; and their family consists of four boys, ranging in age from six years to ten months.

John W. Bolton and Sons, Inc., and the Emerson Manufacturing Company Division announce the appointment of Henry S. Gilbert as staff sales engineer. In this position, Henry will co-ordinate sales and engineering activities of the company as an expanded customer service.

F. Miles Sawyer has been awarded a doctorate in food technology at the University of California at Davis, Calif., where he has been a student. Dr. and Mrs. Sawyer have returned from California and are making their home in Amherst, where Dr. Sawyer has assumed his duties in the food technology department of the University of Massachusetts. He will teach nutrition in addition to work in research.

Don't forget the class reunion in June. See you all there. – William R. Zimmerman, *General Secretary,* 6819 McEwen Road, Dayton 59, Ohio. Richard H. Harris, *Assistant Secretary,* 26 South Street, Grafton, Mass.

1951

After our recent suggestion that most of the Class must be married off by now, there has been a sharp upswing in the matrimony department – from one announcement last time to two for this issue. Bob Keefe and Mary Todd were married in Rutland, Vt., last November and are living in Cincinnati. Dave Findlay and Frances Gatto were married in North Adams, Mass., shortly before Christmas, and have their home in Akron, where Dave works for Goodyear.

Probably we cannot claim any particular credit for reminding these two that it was time to marry and settle down, but it is at least an interesting idea. Then, too, far from all of our friends have settled down; as, for instance, Gene Koch, whose last address was a rural route number in Anchorage, Alaska. Gene's post card states that he is a materials handling specialist with General Electric and doing plenty of traveling. His two boys, ages three and one and one-half, are developing a southern accent, he says; so they must have stayed at home while pop went to Anchorage. Dave Esty and his wife have returned to Maracaibo and Creole Petroleum after Dave's two years with the Navy in Puerto Rico.

Ken McCorkle is now at Oak Ridge National Laboratory, in the chemical technology division. Harold Jandebeur, who was recalled to active Navy duty in the midst of his studies in 1948, has returned to Tech to finish his work and obtain his degree. Still on active duty as a lieutenant, Harold plans to work through the summer and graduate in June or September, 1959. Jim Weisel has moved from Gloversville, N. Y., to Oradell, N. J., joining the Hackensack Water Company.

Ken Bjork, who, after two years in the

Air Force, went to work for Frank W. Bogert, Inc., as estimator and engineer, has since advanced to become chief engineer and later vice-president of the firm, which specializes in the construction of institutional buildings, such as churches and schools. Ken is married and has two children, one boy and one girl. Last year he bought a new home in Oakland, N. J., about 25 miles from the George Washington Bridge.

Roy Niemela is now an assistant professor of management at the University of Florida and is continuing his work toward a Ph.D. in Economics at the Institute. Gordon Powell has accepted a position as assistant professor in the Department of Mining and Metallurgy at the University of Wisconsin.

One of the most important advances in the entire field of civil engineering is being developed at the Institute in connection with Charlie Miller's surveying division. The technique which Charlie and his colleagues are perfecting involves the co-ordinated use of digital computers and three-dimensional aerial photography as a basis for highway design. It is probably no exaggeration to say that this is of unprecedented significance to the highway engineering field, and it is of critical importance in view of the enormous program of highway modernization which has been undertaken for the years to come.

Bruce Hood has been elected to the board of directors of the Davidson Rubber Company, Charlestown, Mass. Bruce has been with the Davidson Company since 1954 and was also appointed vice-president in charge of engineering. Jim Flannery is among the men developing the nose cone of the Atlas missile at General Electric's missile and ordnance systems department in Philadelphia.

Clint Seeley has finished two years of internship in Rochester and is starting a three-year residency in radiology at Massachusetts General Hospital in Boston. Clint's wife, Gail, is a nurse at Massachusetts General, and they live in Belmont. Walt Kinzinger is now working as systems engineer at the National Company's communications systems department in Malden. Jack Barcinski was married last June and is still with Atlas Powder Company in Cincinnati.

And speaking of marriage again, we have a sorrowful message from Captain Bob Knopf: "You missed a good wedding. Nothing more shocking than to see Uncle Steve (Chamberlin) take the plunge. It convinced me I must be a confirmed bachelor. Gerry (Burns) and I decided to open a monastery. Seems to be the only thing to do."

Fred Ezekiel announces the birth of a daughter, Karen, on November 25. And Ralph and Betty Romano have a new name at the bottom of their Christmas cards, bringing the total additions to three – Bonnie, Cindy and Scott.

Ray Haak is a chemist at Naugatuck Chemical, in Conn. Since he got out of the Air Force last October, Roger Christman has been at the Westinghouse Atomic Energy Division in Pittsburgh. Jim Hodges has been transferred by Du Pont from the Wilmington area to the Dacron Research Laboratory in North Carolina. Bill Krampert is now with the Fraventhal Division of Kaydon Engineering Corporation as a sales engineer. Bill was married shortly after graduation in 1951 and has two children.

Interested pupils at Amesbury (Mass.) High School got some good advice last fall on the subject of engineering as a career. Their speaker: Russell W. Osborn, Jr., a former Amesbury student himself and now a resident of Amesbury. John Stanley has been promoted to technical assistant to the manager of field engineering liaison at the International Business Machines plant in Owego, N. Y. The formation of a new company, American Measurement and Control, in Waltham, was announced in November by its president and board chairman, Don O'Brien. Don lives in Wayland with his wife and two daughters.

And finally an item to show that virtue does not go unrewarded: In honor of his appointment to the M.I.T. Educational Council, Bob Gooch was asked by his boss, who is honorary secretary for the Fort Worth area, to sit in on interviews with prospective students. The report on the first interview carefully mentioned Bob's participation, and the Admissions Office dutifully replied by post card that it had received the letter regarding the interview with the applicant, Mr. Bob Gooch, and would give it further study when Mr. Gooch's application papers were reviewed as a whole. The boss's comment: "Well, Bob, if you work diligently I may be able to get you into M.I.T." – RICHARD W. WILLARD, *Secretary*, Box 105, Littleton, Mass. ROBERT S. GOOCH, *Assistant Secretary*, Freese and Nichols, 407 Danciger Building, Fort Worth 2, Texas.

1953

I have just finished talking with Marty Wohl about our reunion in June. For those of you whom the committee has been unable to reach, Mandy Manderson is chairman of the committee and his address is 30 Memorial Drive, Cambridge 42, Mass. The reunion is scheduled for June 14 and 15 at Wentworth-By-the-Sea, Portsmouth, N. H.

Dr. Joseph Kohn and Grace Ann Sacks were married last year. Joe, having received his master's and doctor's degrees from Princeton, is at the Institute for Advanced Studies. Grace graduated from Hunter College, received her master's degree from Columbia, and is now working on her doctorate. Also among last year's marriages was Dick Lockhart's to Edith Miriam Levo. Both Dick and Edith have received master's degrees from Clark University. Lawrence Truppi was one of the speakers on the program of the 161st meeting of the American Meteorological Society. He spoke on the increased use of machine methods in the processing of meteorological data.

A note from Jim Gleason tells of a switch from field sales to development engineering with Alcoa. Tom Perkins, after finishing at the Harvard Business School, is in charge of market research and sales planning at the Hewlett-Packard Co. in Palo Alto, Calif. John Koch reports his new position with Hevi-Duty Electric Co. John is director of research and development for the Industrial Furnace Division. Stan Bloom is an instructor in chemistry at Smith College, and Lionel Kinney has replaced "Lieutenant" with "Mr." at the research department of Caterpillar Tractor Co. Next time, a note from John Medgyesy about some of his travels in Jamaica, British West Indies. – VINSON W. BRONSON, JR., *Secretary*, 58 Greendale Road, Mattapan 26, Mass.

1954

We'll continue the report begun last month from the mail received as a result of our December letter to the Class. Art Kaplan writes that after receiving his S.M. in Nuclear Engineering from M.I.T. and spending two years at the Wright Air Development Center in Ohio working for Uncle Sam, he got married. He is now working for Technical Operations, Inc., in Arlington, Mass. Lee Karney has also finished his military service and reports that he is now back in San Francisco, working for a "local architect." Joe Kozol, who writes uphill, sends word that he has managed to acquire an M.S. in metallurgy from Case Institute of Technology, serve six months with the Army, and marry Renee Bruckner since graduation. His marriage, he reports, was "another M.I.T – Simmons package deal." He and Renee are now living in Hartford, Conn., where he puts in time at Combustion Engineering's Nuclear Division, along with Gerry Golden. Joe also writes that Al Block is still in the Navy, having spent a year in Morocco, and is now cruising around the Arctic on a destroyer.

John Bradshaw reports that he was caught up in Uncle Sam's red tape about a year after graduation, was exiled to the Panama Canal for 18 months, and then to the Brooklyn Naval Shipyard until last December. At the time he wrote, he was still resting from this ordeal, and trying to decide whether to go to work or school. Klaus Zwilsky writes that he hasn't been able to break away from Tech yet. He is currently inching toward an Sc.D. in Metallurgy there. In June, 1956, he married Bobbie Allen from Boston University. Leroy Malouf is also at M.I.T., having returned there after a productive stint in the Air Force. He and his wife now have three little Maloufs under foot – Freddy, Dickie and Sherri. He also reports that Tec Hinck has been in and out of the Air Force, has gotten married, and is now back at Tech.

Ed Hair sends word that he is now a development engineer for Procter and Gamble in Cincinnati, developing baking mixes. Ed is the proud papa of two, John and Lucy. Dom Sama, whose views I can appreciate, writes that he is still cowering within the ivied walls of M.I.T. after a more than distasteful experience with the outside world (639 days in the Army). Dom says that he may eventually have to go to work, but "at the rate my thesis is progressing, I have no such fears." John D'Amico, another among those who have gotten their military and marriage services behind them, is now a civilian chemical engineer at Fort Detrick, Maryland, and a night student at George Washington University, working on a master's de-

gree in business administration. He and his wife Marge have a year-and-a-half-old daughter, Suzanne.

Marty Mills writes from Franklin Square, N. Y., that he is engaged to Ruth Sherry, a mathematics instructor at Adelphi College, and plans to be married in August. Marty got his M.S. in chemical engineering from Carnegie Tech and is now designing equipment for petroleum refineries and chemical plants with M. W. Kellogg in New York City. Marty reports that Irv Kusnitz married Florie Pinchuk in June, 1956, and is living in Jamaica Estates, N. Y., celebrating the recent arrival of son Jonathon. Marty also says that he believes Herb Jacobson is working for the Kennecott Copper Company in Tucson, Ariz. and that Shel Dick is still in the Army in Berlin.

Roy Riedinger is working on an M.B.A. at the University of Pennsylvania with Kevin Woelflein, Tom Gross, and Matt Baczewski. Roy reports that Rich Wilson is working for Reliance Electric Company in Cleveland and now has two children, "one of each." And we'll end this month's gab with Tom Gibbs's report that he has returned to civilian life and is working in missile research at the Avco Manufacturing Corporation in Lawrence, Mass. — EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

1955

Hi! There has been no avalanche of mail at the new address, but there are a few noteworthy items supplied for the most part by the good old Technology News Service. Recently a number of our classmates have been appearing in print and at the meetings of professional societies. At the October meeting of the Audio Engineering Society in New York City, Weldon Clark of Bolt, Beranek, and Newman, Inc., was a collaborator on a very interesting paper on broadcasting studio design. The paper points out the importance of attention to the acoustical characteristics of the control room from which the program director makes all his arrangements in the broadcast to be transmitted and makes recommendations for the design of the studio. Also at this meeting Roger Prager presented a paper discussing the measurement of flutter in magnetic tape recording. The research for this paper was done at the M.I.T. Acoustic Laboratory under a contract of the Bureau of Ships. Roger is now in San Diego with the Navy Electronics Laboratory there. Henry Kolm'50, who is at the Lincoln Laboratory, is coauthor of an article, a report on his research into the problem of producing high-intensity pulsed magnetic fields, which appeared in the October *Review of Scientific Instruments*. And Gilbert Davidson's article, "Fast Read-Out Chronotron System," appeared in the December issue of the same journal.

On the social side, the engagement of Joyce Stearns of Auburndale, Mass., to Jud Ball has been announced. Joyce has attended the New England Conservatory of Music, the Alicia Langford School of Ballet, and the Ballet Theatre School. On December 28 Ed Riter and Barbara Clark of Evansville, Ind., formerly of Needham, were married in Needham. Barbara, a 1957 graduate of Tufts, is a Chi Omega. After a Lake Placid honeymoon, the Riters are now living in Blasdell, N. Y., where Ed is taking the managerial training course of Bethlehem Steel. Ed just recently completed two years in the Air Force.

The Ed Pulsifers are celebrating the arrival of a son born in January in Charleston, W. Va. I understand that Ed expects soon to be transferred from Charleston to Buffalo, N. Y., with the Beckman Instrument Company. And Cora and Olaf Stackelberg are likewise celebrating the arrival of a son, John Sleighter. Still at Fort Detrick, Olaf is hoping to escape the Army soon enough to return to the University of Minnesota for summer session.

I fear that that's the news for now. I am still a *hausfrau*, the job situation on the East Coast being rather poor for engineers at this time; so I can really devote myself to the old class notes, provided you all send me some news! MRS. J. H. VENARDE (Dell Lanier), *Secretary*, 107 Mullin Road, Wilmington 3, Del. FIRST LIEUTENANT LABAN D. SHAPIRO, *Assistant Secretary*, A03047883, 4083d Air Base Group, A.P.O. 23, New York, N. Y.

1956

April is a spring month and, therefore, definitely at odds with the snowstorm I waded through to eat breakfast this February morning.

Since the last article, I have received a new set of greetings from the Air Force requesting my presence at Scott Air Force Base, Ill., in March. This brings to a temporary end my work for Pennsalt Chemicals in Calvert City, Ky. Since graduation I have been a development engineer working with refrigerants, rocket fuel ingredients, insecticides, chlorine, caustic and other chemicals basic to industry. Not exactly a Madison Avenue ideal or an eight to five job, but a darned interesting way to start in industry.

Early in February the ground was broken for the Du Pont Athletic Center building. The new Du Pont tennis courts behind Baker House were completed last fall.

Dimitry Vergun writes from San Francisco that he has received his master's from Stanford and is working for Skidmore, Owings, and Merrill. He and the Mrs. enjoy California very much. A letter from Ed Zoolalian has arrived from Tokyo. After graduation he worked for the Mercury Division of Ford, but now the Army has him working in Ordnance. Ray Peck was with him until November, but Ray is now in Korea.

Ken Meliere received his master's at Tech last June and is now with the Plans and Process Division of the Army Chemical Center, Maryland. The Paul Ciancis are now living in Phalsburg, France, where Paul is stationed with the Air Force. Steve Newman is in the medical college at Baylor University. Dick Peskin is a graduate student and instructor at Princeton. Ed Purcell is in Piping Design at Electric Boat.

Engagements include Fred Fahrenholz to Martha Robinson of Essex, who is a coworker at the Naval supersonic laboratory; Charles Hazard to Carol Lee Dahlborg of Brockton; Dean Karnopp to Carol Shove Reed of North Conway, N. H.; and David Morse to Frances Ford of West Orange, N. J. Dave also received his master's in Nuclear Engineering last June.

Doreta Binner has become Mrs. Robert Klein; Rodrigo Botero has wed Louise Bell Nichols of Weston; and Thomas J. Nelson wed Mary Margaret Baker of Lynn. Yes sir, our Class has chosen eastern mates as the best brand available. — BRUCE B. BREDEHOFT, *Secretary*, 1528 Dial Court, Springfield, Ill. M. PHILIP BRYDEN, *Assistant Secretary*, 3684 McTavish Street, Montreal 2, P. Q., Canada.

1957

Notwithstanding the June weddings of last year, marriages continue to seem the main activity of '57 Tech men. In October, Sandra MacLean became the bride of David Clunies. Ushering the service were Gilbert Fryklund, Lieutenant James Chorak, and Richard Williamson. In November, William Dean took Elizabeth Althouse as his bride with the assistance of C. Elbert Valentine, Thomas Dwyer, Peter Hohorst, Edgar Hasselmann, and Charles Henry. Later the same month William Washburn passed through the portals of matrimony with Lois Stanley. In December, Lewis Smith was married in Boston to Evelyn Wolff. In attendance were Pierre Cathou, Renata Egone, Lester Gimpelson, Lawrence Schwartz, and C. David Stuber; your Assistant Secretary was best man. Later that same afternoon, Les and Larry hurried over to Brookline to witness with Paul Nathan the wedding of Sumner Abrams to Stephanie Haaxma. In February, Sigma Alpha Epsilon turned out again at the marriage of Robert Kyser and Nancy Cornelius. John Marsland, whose engagement to Carol Hesse was announced last Thanksgiving, was best man. Another recent engagement is that of Robert Batchelder and Lucy Bangs.

Steven Hawkins was recently commissioned as a naval ensign at Naval Officer Candidate School in Rhode Island. Lieutenant William Doughty in December completed a three-month course designed to familiarize officers in the duties of the Chemical Corps. Although pleading that he had spent several years at M.I.T. breathing hydrogen sulfide fumes, he was not permitted advanced standing.

Word from the University of Detroit is that James Keith is delving into the mysteries of gravity. He is assisting in the design of a machine from which (it is hoped) gravitational radiation will be able to be measured. Richard Knapp, who received his degree in physics, is becoming quite well known in the ecclesiastical world of Hartford. In one church there is being used an 847-pipe organ which he built, and he is organist and choir director in another church. All this is in addition to his position at Combustion Engineering. The highest position awarded to a member of the Class of '57 has gone to Russell Peirce. Russ has become a weather observer atop Mount Washington in New Hampshire. — ALAN M. MAY, *Secretary*, 55 East End Avenue, New York 28, N. Y. MARTIN R. FORSBERG, *Assistant Secretary*, 8 Forest Street, Cambridge 40, Mass.

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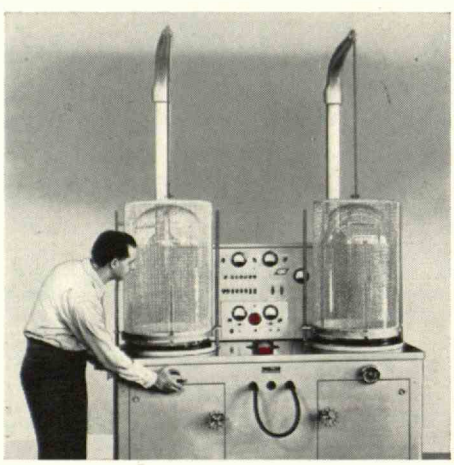

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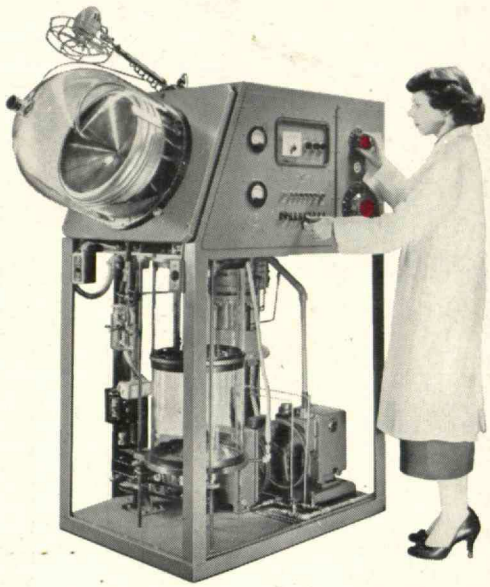

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